0071079

SAF-RC-025
100-BC Remaining Pipelines and Sewers - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 JJE 09/13/06
INITIAL/DATE

COMMENTS:

SDG K0288 SAF-RC-025

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SEP 2 5 2006
EDMC

Waste Site: 100-C-9:2 (1607-B8 & B9)

Date: 5 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Subsite 100-C-9:2
Subject: Radiochemistry - Data Package No. K0288-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0288 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11VK9	4/5/06	Soil	C	See note 1
J11VL0	4/5/06	Soil	C	See note 1
J11VL1	4/5/06	Soil	C	See note 1
J11VL2	4/5/06	Soil	C	See note 1
J11VL3	4/5/06	Soil	C	See note 1
J11VL4	4/5/06	Soil	C	See note 1
J11VL5	4/5/06	Soil	C	See note 1 & 2
J11VL6	4/5/06	Soil	C	See note 1
J11VL7	4/5/06	Soil	C	See note 1
J11VL8	4/5/06	Soil	C	See note 1
J11VL9	4/5/06	Soil	C	See note 1
J11VM0	4/5/06	Soil	C	See note 1
J11VM1	4/5/06	Soil	C	See note 1
J11VM2	4/5/06	Soil	C	See note 1
J11VM3	4/5/06	Soil	C	See note 1
J11VM4	4/5/06	Soil	C	See note 1
J11VM5	4/5/06	Soil	C	See note 1
J11VM6	4/5/06	Soil	C	See note 1
J11VM7	4/5/06	Soil	C	See note 1

1 – Gamma spectroscopy, gross alpha, gross beta.
2 - Total strontium.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No equipment blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the contract required detection limit (CRDL) and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J11VL2/J11VM6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. The RPD for thorium-228 was 31%. Under the FHI statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. Eighty-nine analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0288 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Eighty-nine analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

Appendix 2

Summary of Data Qualification

RADOICHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0288	REVIEWER: TLI	Project: 100-C-9:2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB	SDG: K0288																		
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7	
Remarks								orig											
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Gross alpha		6.69		10.6		8.79		4.02	U	6.82		11.0		4.20	U	11.9		3.14	U
Gross beta		18.9		11.0		15.6		12.8		11.3		17.0		180		18.1		16.5	
Potassium-40		11.0		6.92		6.92		9.84		6.61		8.98		5.10		9.76		7.28	
Cobalt 60	0.05	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Cesium 137	0.05	U	U*	U	U*	0.134		U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Radium-226		0.494		0.348		0.380		0.424		0.293		0.491		0.195		0.533		0.322	
Radium-228		0.727		0.588		0.919		0.775		0.442		0.711		0.540		0.513		U	U
Europium 152	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Europium 154	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Thorium-228		0.680		0.496		0.570		0.475		0.406		0.508		0.353		0.541		0.542	
Thorium-232		0.727		0.588		0.919		0.775		0.442		0.711		0.540		0.513		U	U
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Total strontium		NA		NA		NA		NA		NA		NA		18.3		NA		NA	

000010

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB	SDG: K0288																		
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6	
Remarks																		Duplicate	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Gross alpha		11.2		7.02		6.31	U	6.66	U	4.33	U	8.14		9.71		8.46		7.24	
Gross beta		18.1		17.7		16.6		12.9		16.5		17.4		17.3		11.6		17.3	
Potassium-40		6.46		7.28		7.94		8.79		11.3		12.2		8.11		9.08		8.88	
Cobalt 60	0.05	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Cesium 137	0.05	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Radium-226		0.347		0.370		0.325		0.359		0.408		0.305		0.220		0.369		0.508	
Radium-228		U	U	0.447		0.597		U	U	0.634		0.696		U	U	0.988		0.706	
Europium 152	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Europium 154	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Europium 155	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*
Thorium-228		0.426		0.758		0.508		0.639		0.620		0.432		0.437		0.446		0.653	
Thorium-232		U	U	0.447		0.597		U	U	0.634		0.696		U	U	0.988		0.706	
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Total strontium		NA		NA		NA		NA		NA		NA		NA		NA		NA	

000011

* - RQL exceeded

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize potential miss-interpretation of results. All other qualifiers shown were applied during validation.

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-01 J11VK9

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-01	Client sample id	J11VK9
Dept sample id	7414-001	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 10:30 678 g
% solids	94.8	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.69	4.7	6.5	10		93A
Gross Beta	12587-47-2	18.9	5.8	8.9	15		93B
Potassium 40	13966-00-2	11.0	1.5	0.76			GAM
Cobalt 60	10198-40-0	U		0.079	0.050	U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.494	0.17	0.16	0.10		GAM
Radium 228	15262-20-1	0.727	0.33	0.33	0.20		GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.21	0.10	U	GAM
Thorium 228	14274-82-9	0.680	0.12	0.13			GAM
Thorium 232	TH-232	0.727	0.33	0.33			GAM
Uranium 235	15117-96-1	U		0.30		U	GAM
Uranium 238	U-238	U		9.1		U	GAM
Americium 241	14596-10-2	U		0.41		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

9/4/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-02 J11VL0

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-02	Client sample id	J11VL0
Dept sample id	7414-002	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 10:35 748 g
% solids	94.4	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	10.6	5.3	6.7	10		93A
Gross Beta	12587-47-2	11.0	5.4	8.7	15		93B
Potassium 40	13966-00-2	6.92	1.9	0.74			GAM
Cobalt 60	10198-40-0	U		0.073	0.050	U	GAM
Cesium 137	10045-97-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	0.348	0.14	0.13	0.10		GAM
Radium 228	15262-20-1	0.588	0.33	0.33	0.20		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.496	0.082	0.081			GAM
Thorium 232	TH-232	0.588	0.33	0.33			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		9.3		U	GAM
Americium 241	14596-10-2	U		0.26		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

V 9/4/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-03 J11VL1

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-03	Client sample id	J11VL1
Dept sample id	7414-003	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 10:50 650 g
% solids	90.1	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.79	4.7	5.9	10		93A
Gross Beta	12587-47-2	15.6	4.1	5.5	15		93B
Potassium 40	13966-00-2	6.92	2.9	0.65			GAM
Cobalt 60	10198-40-0	U		0.081	0.050	U	GAM
Cesium 137	10045-97-3	0.134	0.074	0.082	0.10		GAM
Radium 226	13982-63-3	0.380	0.14	0.12	0.10		GAM
Radium 228	15262-20-1	0.919	0.32	0.26	0.20		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.570	0.12	0.12			GAM
Thorium 232	TH-232	0.919	0.32	0.26			GAM
Uranium 235	15117-96-1	U		0.23		U	GAM
Uranium 238	U-238	U		7.6		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

9/4/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-04 J11VL2

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-04	Client sample id	J11VL2
Dept sample id	7414-004	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 10:54 727 g
% solids	93.9	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.02	3.8	5.5	10	U	93A
Gross Beta	12587-47-2	12.8	4.2	6.0	15		93B
Potassium 40	13966-00-2	9.84	1.3	0.53			GAM
Cobalt 60	10198-40-0	U		0.071	0.050	U	GAM
Cesium 137	10045-97-3	U		0.066	0.10	U	GAM
Radium 226	13982-63-3	0.424	0.11	0.10	0.10		GAM
Radium 228	15262-20-1	0.775	0.23	0.18	0.20		GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.17	0.10	U	GAM
Thorium 228	14274-82-9	0.475	0.081	0.092			GAM
Thorium 232	TH-232	0.775	0.23	0.18			GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		8.8		U	GAM
Americium 241	14596-10-2	U		0.37		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

R 9/11/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-05 J11VL3

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-05	Client sample id	J11VL3
Dept sample id	7414-005	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 12:25 705 g
% solids	91.0	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.82	3.8	4.5	10		93A
Gross Beta	12587-47-2	11.3	6.6	10	15		93B
Potassium 40	13966-00-2	6.61	2.0	0.69			GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Cesium 137	10045-97-3	U		0.079	0.10	U	GAM
Radium 226	13982-63-3	0.293	0.13	0.13	0.10		GAM
Radium 228	15262-20-1	0.442	0.26	0.28	0.20		GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.406	0.081	0.083			GAM
Thorium 232	TH-232	0.442	0.26	0.28			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		8.4		U	GAM
Americium 241	14596-10-2	U		0.25		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

R 9/11/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-06 J11VL4

DATA SHEET

SDG	7414	Client/Case no	Hanford	SDG K0288	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R604039-06	Client sample id	J11VL4		
Dept sample id	7414-006	Location/Matrix	100-C-9:2 (1607-B8 & B9)	SOLID	
Received	04/07/06	Collected/Weight	04/05/06 12:35	736 g	
% solids	94.1	Custody/SAF No	RC-025-007	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	11.0	4.8	4.9	10		93A
Gross Beta	12587-47-2	17.0	4.3	5.5	15		93B
Potassium 40	13966-00-2	8.98	1.7	1.1			GAM
Cobalt 60	10198-40-0	U		0.10	0.050	U	GAM
Cesium 137	10045-97-3	U		0.084	0.10	U	GAM
Radium 226	13982-63-3	0.491	0.15	0.13	0.10		GAM
Radium 228	15262-20-1	0.711	0.36	0.37	0.20		GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.22	0.10	U	GAM
Thorium 228	14274-82-9	0.508	0.13	0.15			GAM
Thorium 232	TH-232	0.711	0.36	0.37			GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		13		U	GAM
Americium 241	14596-10-2	U		0.22		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-07 J11VL5

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-07	Client sample id	J11VL5
Dept sample id	7414-007	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 12:40 701 g
% solids	95.8	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.20	4.2	4.7	10	U	93A
Gross Beta	12587-47-2	180	9.5	5.4	15		93B
Total Strontium	SR-RAD	18.3	0.96	0.41	1.0		SR
Potassium 40	13966-00-2	5.10	1.6	0.46			GAM
Cobalt 60	10198-40-0	U		0.082	0.050	U	GAM
Cesium 137	10045-97-3	U		0.068	0.10	U	GAM
Radium 226	13982-63-3	0.195	0.11	0.13	0.10		GAM
Radium 228	15262-20-1	0.540	0.29	0.26	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.353	0.093	0.098			GAM
Thorium 232	TH-232	0.540	0.29	0.26			GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		8.2		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

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SAMPLE DELIVERY GROUP K0288

R604039-08 J11VL6

DATA SHEET

SDG	7414	Client/Case no	Hanford	SDG_K0288	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R604039-08	Client sample id	J11VL6		
Dept sample id	7414-008	Location/Matrix	100-C-9:2 (1607-B8 & B9)	SOLID	
Received	04/07/06	Collected/Weight	04/05/06 12:45	809 g	
% solids	96.3	Custody/SAF No	RC-025-007	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	11.9	4.8	4.2	10		93A
Gross Beta	12587-47-2	18.1	4.2	5.4	15		93B
Potassium 40	13966-00-2	9.76	1.5	0.92			GAM
Cobalt 60	10198-40-0	U		0.094	0.050	U	GAM
Cesium 137	10045-97-3	U		0.094	0.10	U	GAM
Radium 226	13982-63-3	0.533	0.17	0.18	0.10		GAM
Radium 228	15262-20-1	0.513	0.28	0.35	0.20		GAM
Europium 152	14683-23-9	U		0.21	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.541	0.087	0.095			GAM
Thorium 232	TH-232	0.513	0.28	0.35			GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-09 J11VL7

DATA SHEET

SDG	7414	Client/Case no	Hanford	SDG K0288	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R604039-09	Client sample id	J11VL7		
Dept sample id	7414-009	Location/Matrix	100-C-9:2 (1607-B8 & B9)	SOLID	
Received	04/07/06	Collected/Weight	04/05/06 12:50	687 g	
% solids	92.6	Custody/SAF No	RC-025-007	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	3.14	3.4	4.9	10	U	93A
Gross Beta	12587-47-2	16.5	4.2	5.7	15		93B
Potassium 40	13966-00-2	7.28	1.6	1.3			GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.062	0.10	U	GAM
Radium 226	13982-63-3	0.322	0.15	0.15	0.10		GAM
Radium 228	15262-20-1	U		0.32	0.20	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.15	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.542	0.13	0.14			GAM
Thorium 232	TH-232	U		0.32		U	GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		8.5		U	GAM
Americium 241	14596-10-2	U		0.12		U	GAM

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SAMPLE DELIVERY GROUP K0288

R604039-10 J11VL8

DATA SHEET

SDG	7414	Client/Case no	Hanford	SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R604039-10	Client sample id	J11VL8	
Dept sample id	7414-010	Location/Matrix	100-C-9:2 (1607-B8 & B9)	SOLID
Received	04/07/06	Collected/Weight	04/05/06 13:00	816 g
% solids	96.6	Custody/SAF No	RC-025-007	RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	11.2	5.3	6.4	10		93A
Gross Beta	12587-47-2	18.1	4.6	6.0	15		93B
Potassium 40	13966-00-2	6.46	1.6	0.66			GAM
Cobalt 60	10198-40-0	U		0.070	0.050	U	GAM
Cesium 137	10045-97-3	U		0.092	0.10	U	GAM
Radium 226	13982-63-3	0.347	0.12	0.11	0.10		GAM
Radium 228	15262-20-1	U		0.65	0.20	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.21	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.426	0.066	0.067			GAM
Thorium 232	TH-232	U		0.65		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		7.6		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

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SAMPLE DELIVERY GROUP K0288

R604039-11 J11VL9

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-11	Client sample id	J11VL9
Dept sample id	7414-011	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 13:30 620 g
% solids	90.5	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.02	4.7	6.5	10		93A
Gross Beta	12587-47-2	17.7	5.8	8.9	15		93B
Potassium 40	13966-00-2	7.28	1.7	1.6			GAM
Cobalt 60	10198-40-0	U		0.095	0.050	U	GAM
Cesium 137	10045-97-3	U		0.066	0.10	U	GAM
Radium 226	13982-63-3	0.370	0.19	0.18	0.10		GAM
Radium 228	15262-20-1	0.447	0.31	0.33	0.20		GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.758	0.18	0.16			GAM
Thorium 232	TH-232	0.447	0.31	0.33			GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		8.6		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM

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SAMPLE DELIVERY GROUP K0288

R604039-12 J11VM0

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-12	Client sample id	J11VM0
Dept sample id	7414-012	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 13:40 760 g
% solids	95.2	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.31	4.9	6.9	10	U	93A
Gross Beta	12587-47-2	16.6	5.6	8.7	15		93B
Potassium 40	13966-00-2	7.94	2.7	0.79			GAM
Cobalt 60	10198-40-0	U		0.086	0.050	U	GAM
Cesium 137	10045-97-3	U		0.074	0.10	U	GAM
Radium 226	13982-63-3	0.325	0.16	0.15	0.10		GAM
Radium 228	15262-20-1	0.597	0.37	0.35	0.20		GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Europium 155	14391-16-3	U		0.21	0.10	U	GAM
Thorium 228	14274-82-9	0.508	0.12	0.12			GAM
Thorium 232	TH-232	0.597	0.37	0.35			GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		8.8		U	GAM
Americium 241	14596-10-2	U		0.26		U	GAM

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SAMPLE DELIVERY GROUP K0288

R604039-13 J11VM1

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-13	Client sample id	J11VM1
Dept sample id	7414-013	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 14:15 874 g
% solids	96.7	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	6.66	4.2	5.6	10		93A
Gross Beta	12587-47-2	12.9	3.9	5.5	15		93B
Potassium 40	13966-00-2	8.79	1.3	0.69			GAM
Cobalt 60	10198-40-0	U		0.069	0.050	U	GAM
Cesium 137	10045-97-3	U		0.055	0.10	U	GAM
Radium 226	13982-63-3	0.359	0.13	0.13	0.10		GAM
Radium 228	15262-20-1	U		0.26	0.20	U	GAM
Europium 152	14683-23-9	U		0.13	0.10	U	GAM
Europium 154	15585-10-1	U		0.12	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.639	0.12	0.11			GAM
Thorium 232	TH-232	U		0.26		U	GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		6.4		U	GAM
Americium 241	14596-10-2	U		0.10		U	GAM

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SAMPLE DELIVERY GROUP K0288

R604039-14 J11VM2

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-14	Client sample id	J11VM2
Dept sample id	7414-014	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 14:20 715 g
% solids	96.0	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	4.33	3.6	5.1	10	U	93A
Gross Beta	12587-47-2	16.5	4.4	5.9	15		93B
Potassium 40	13966-00-2	11.3	1.2	0.37			GAM
Cobalt 60	10198-40-0	U		0.071	0.050	U	GAM
Cesium 137	10045-97-3	U		0.059	0.10	U	GAM
Radium 226	13982-63-3	0.408	0.15	0.13	0.10		GAM
Radium 228	15262-20-1	0.634	0.30	0.30	0.20		GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.13	0.10	U	GAM
Europium 155	14391-16-3	U		0.14	0.10	U	GAM
Thorium 228	14274-82-9	0.620	0.12	0.12			GAM
Thorium 232	TH-232	0.634	0.30	0.30			GAM
Uranium 235	15117-96-1	U		0.23		U	GAM
Uranium 238	U-238	U		6.2		U	GAM
Americium 241	14596-10-2	U		0.11		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

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SAMPLE DELIVERY GROUP K0288

R604039-15 J11VM3

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-15	Client sample id	J11VM3
Dept sample id	7414-015	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 14:50 801 g
% solids	96.0	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.14	4.5	5.2	10		93A
Gross Beta	12587-47-2	17.4	6.9	11	15		93B
Potassium 40	13966-00-2	12.2	2.6	0.63			GAM
Cobalt 60	10198-40-0	U		0.091	0.050	U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	0.305	0.17	0.17	0.10		GAM
Radium 228	15262-20-1	0.696	0.33	0.32	0.20		GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.23	0.10	U	GAM
Thorium 228	14274-82-9	0.432	0.087	0.090			GAM
Thorium 232	TH-232	0.696	0.33	0.32			GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		9.3		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

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SAMPLE DELIVERY GROUP K0288

R604039-16 J11VM4

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-16	Client sample id	J11VM4
Dept sample id	7414-016	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 14:55 732 g
% solids	96.3	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	9.71	4.7	5.1	10		93A
Gross Beta	12587-47-2	17.3	4.3	5.5	15		93B
Potassium 40	13966-00-2	8.11	1.6	0.57			GAM
Cobalt 60	10198-40-0	U		0.078	0.050	U	GAM
Cesium 137	10045-97-3	U		0.062	0.10	U	GAM
Radium 226	13982-63-3	0.220	0.11	0.11	0.10		GAM
Radium 228	15262-20-1	U		0.52	0.20	U	GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.437	0.093	0.096			GAM
Thorium 232	TH-232	U		0.52		U	GAM
Uranium 235	15117-96-1	U		0.21		U	GAM
Uranium 238	U-238	U		7.1		U	GAM
Americium 241	14596-10-2	U		0.20		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

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SAMPLE DELIVERY GROUP K0288

R604039-17 J11VM5

DATA SHEET

SDG	7414	Client/Case no	Hanford	SDG K0288	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R604039-17	Client sample id	J11VM5		
Dept sample id	7414-017	Location/Matrix	100-C-9:2 (1607-B8 & B9)	SOLID	
Received	04/07/06	Collected/Weight	04/05/06 15:00	740 g	
% solids	95.8	Custody/SAF No	RC-025-007	RC-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.46	4.6	5.3	10		93A
Gross Beta	12587-47-2	11.6	4.5	6.5	15		93B
Potassium 40	13966-00-2	9.08	2.7	0.81			GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.15	0.10	U	GAM
Radium 226	13982-63-3	0.369	0.16	0.15	0.10		GAM
Radium 228	15262-20-1	0.988	0.38	0.31	0.20		GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.22	0.10	U	GAM
Thorium 228	14274-82-9	0.446	0.089	0.088			GAM
Thorium 232	TH-232	0.988	0.38	0.31			GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		10		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

9/14/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-18 J11VM6

DATA SHEET

SDG	7414	Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604039-18	Client sample id	J11VM6
Dept sample id	7414-018	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
Received	04/07/06	Collected/Weight	04/05/06 10:58 727 g
% solids	94.8	Custody/SAF No	RC-025-007 RC-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	7.24	3.9	4.0	10		93A
Gross Beta	12587-47-2	17.3	4.2	5.4	15		93B
Potassium 40	13966-00-2	8.88	1.4	0.82			GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.082	0.10	U	GAM
Radium 226	13982-63-3	0.508	0.14	0.13	0.10		GAM
Radium 228	15262-20-1	0.706	0.34	0.33	0.20		GAM
Europium 152	14683-23-9	U		0.22	0.10	U	GAM
Europium 154	15585-10-1	U		0.26	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.653	0.12	0.13			GAM
Thorium 232	TH-232	0.706	0.34	0.33			GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		7.5		U	GAM
Americium 241	14596-10-2	U		0.40		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

9/11/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0288 was composed of eighteen solid (soil) samples designated under SAF No. RC-025 with a Project Designation of: 100-BC Remaining Pipelines and Sewers-Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were originally transmitted to WCH via e-mail on May 9, 2006. The strontium results were transmitted to WCH via e-mail on June 28, 2006.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analysis

No problems were encountered during the course of the analyses.

2.2 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.3 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Senior Program Manager

6/29/6
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code: Air Quality	Data Turnaround: 21 days		
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9) K0288 (7414)	SAF No.: RC-025	
Ice Chest No.: ERC-02-103	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060328	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

~~cool 4 degrees centigrade~~

None TRE 4-6-06

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	500mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081 ~~Chloro-Herbicides - 8151~~					
Sample No.	Matrix *	Sample Date	Sample Time								
J11VK9	SOIL	04/05/06	1030				✓				
J11VL0	SOIL	04/05/06	1035				✓				
J11VL1	SOIL	04/05/06	1050				✓				
J11VL2	SOIL	04/05/06	1054				✓				
J11VL3	SOIL	04/05/06	1025				✓				

04/05/06

04/05/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-6 1630
3728 #2A	4-6-06 1130	TR Edmundson	4-6-06 1130
TR Edmundson	4-6-06 1500	FED EX	
FED EX		Thu 04/07/06	9:30

SPECIAL INSTRUCTIONS

(2) addition to item # 2. Run gross alpha and gross beta off available material.

(1) ~~ICP Metals - 6010TR~~ (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, ~~Chromium~~, Cobalt, Copper, Iron, Lead, Lithium, ~~Magnesium~~, Manganese, Molybdenum, Nickel, Phosphorus, ~~Potassium~~, ~~Selenium~~, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {~~Titanium~~, Uranium, Zinc, Zirconium}; Mercury - ~~7471~~ - (CV)

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code	Data Turnaround: Air Quality 21 days		
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9) K0288 (7414)	SAF No.: RC-025	
Ice Chest No.: ERC-02-103	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060 328	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

~~cool 4 degrees centigrade~~

None TRE 4-6-06

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250g	250g	250mL	250mL	500mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081 ~~Chlorinated Herbicides - EPA 8151~~				

000033

Sample No.	Matrix *	Sample Date	Sample Time									
J11VL4	SOIL	04/05/06	1235					✓				
J11VL5	SOIL	04/05/06	1240					✓				
J11VL6	SOIL	04/05/06	1245					✓				
J11VL7	SOIL	04/05/06	1250					✓				
J11VL8	SOIL	04/05/06	1300					✓				

04/05/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-6 1630	3728 H2A	4-5-6 1630
3728 H2A	4-6-06 1130	TR Edmundson	4-6-06 1130
TR Edmundson	4-6-06 1500	FED EX	
FED EX		MM	04/07/06 9:30

SPECIAL INSTRUCTIONS

(2) addition to item # 2. Run gross alpha and gross beta off available material.

(1) ~~ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 (CV)~~

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

Personnel not available to Relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 3 of 4

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code	Data Turnaround
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9) K0288 (7414)		SAF No.: RC-025	Air Quality	21 days
Ice Chest No.: ERC-02-103	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex		
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060328		Bill of Lading/Air Bill No.: SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

~~cool 4 degrees centigrade~~ TRE 4-6-06

none

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C	
Type of Container	G/P	G/P	aG	aG	G/P	aG	
No. of Container(s)	1	1	1	1	1	1	
Volume	250g	250g	250mL	250mL	500mL	250mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081; ~~Chloro Herbicides - 8151~~	

000034

04/05/06

04/05/06

Sample No.	Matrix *	Sample Date	Sample Time									
J11VL9	SOIL	04/05/06	1330					✓				
J11VM0	SOIL	04/05/06	1340					✓				
J11VM1	SOIL	04/05/06	1415					✓				
J11VM2	SOIL	04/05/06	1420					✓				
J11VM3	SOIL	04/05/06	1450					✓				

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 RU 2A	4-5-06 1630
3728 #2A	4-6-06 1130	[illegible] TR Edmundson	4-6-06 1130
[illegible] TR Edmundson	WCH 4-6-06 1500	FED EX	
FED EX		Alex [illegible]	4/7/06 10:00

SPECIAL INSTRUCTIONS

(2) addition to item # 2. Run gross alpha and gross beta off available material.

(1) ~~ICP Metals - 6010TR~~ (Client List) {Aluminum. Antimony, Arsenic. Barium. ~~Beryllium.~~ Boron. Cadmium. Calcium. Chromium. Cobalt. Copper. Iron. Lead. ~~Lithium.~~ Magnesium. Manganese. Molybdenum, Nickel. Phosphorus. ~~Potassium.~~ Selenium. Silicon, Silver. Sodium. Strontium. Thallium. Tin, Vanadium}; ~~ICP Metals - 6010A (Add-on) {Titanium. Uranium.~~ Zinc. Zirconium}: Mercury - ~~7471 (CV)~~ 04/06/06

(2) Gamma Spectroscopy (TCL List) {Cesium-137. Cobalt-60. Europium-152. Europium-154. Europium-155}

Personnel not available to relinquish samples from 3728 Ref #2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code: Air Quality	Data Turnaround: 21 days		
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9) K0288 (7414)	SAF No.: RC-025	
Ice Chest No.: ERC-02-103	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060328	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

~~cool 4 degrees centigrade~~

none TRB 4-6-06

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250g	250g	250mL	250mL	500mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081 ~~Chloro-Herbicides - 8151~~				
			05/06			05/06				

000035

Sample No.	Matrix *	Sample Date	Sample Time									
J11VM4	SOIL	04/05/06	1455					✓				
J11VM5	SOIL	04/05/06	1500					✓				
J11VM6	SOIL	04/05/06	1058					✓				
~~J11VM7~~ 04/05/06	~~SOIL~~											

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: Kevin Singleton	Received By/Stored In: 3728 Ref 2A	1630 4-5-06
Relinquished By/Removed From: 3728 Ref 2A	Received By/Stored In: T.E. Edmundson / T.E. Edmundson	4-6-06 1130
Relinquished By/Removed From: T.E. Edmundson / T.E. Edmundson	Received By/Stored In: FED EX	4-6-06 1500
Relinquished By/Removed From: FED EX	Received By/Stored In:	04/07/06 9:30
Relinquished By/Removed From:	Received By/Stored In:	
Relinquished By/Removed From:	Received By/Stored In:	

SPECIAL INSTRUCTIONS

(2) addition to item # 2. Run gross alpha and gross beta off available material.

(1) ~~ICP Metals - 6010TR~~ (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 (CV)

(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}.

Personnel not available to Relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-C-9:2		DATA PACKAGE:	K0288	
VALIDATOR:	TLT	LAB: EB		DATE: 9/2/06	
			SDG:	K0288	

ANALYSES PERFORMED

Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			

SAMPLES/MATRIX

J11VK9	J11VL0	J11VL1	J11VL2	J11VL3	J11VL4	J11VL5
J11VL6	J11VL7	J11VL8	J11VL9	J11VM0	J11VM1	J11VM2
J11VM3	J11VM4	J11VM5	J11VM6			
						Soil

1. Completeness ..... ☐ N/A

Technical verification forms present? ..... Yes (No) N/A

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

Initial calibration acceptable? ..... Yes No N/A

Standards NIST traceable? ..... Yes No N/A

Standards Expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

Calibration check acceptable? ..... Yes No N/A

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments: _____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

Method blank results acceptable? ..... Yes No N/A

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

Field blank results acceptable? ..... Yes No N/A

Analytes detected in field blank(s)? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

LCS/BSS recoveries acceptable? ..... Yes No N/A

LCS/BSS traceable? (Levels D,E) ..... Yes No N/A

LCS/BSS expired? (Levels D,E) ..... Yes No N/A

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

_____

_____

_____

_____

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

Chemical carrier traceable? (Levels D, E) ..... Yes No N/A

Chemical carrier expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

Tracer traceable? (Levels D, E) ..... Yes No N/A

Tracer expired? (Levels D, E) ..... Yes No N/A

Transcription/Calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Spike source traceable? (Levels D, E) ..... Yes No N/A

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments:

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split sample(s) analyzed? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no FS or PAs

FD - thorium-228 31.59 -

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? Yes No N/A

Results supported in raw data?(Levels D, E) Yes No N/A

Results Acceptable? (Levels D, E) Yes No N/A

Transcription/Calculation errors? (Levels D, E) Yes No N/A

MDA's meet required detection limits? Yes No N/A

Transcription/calculation errors? (Levels D, E) Yes No N/A

Comments: 89 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-20 Method Blank

METHOD BLANK

SDG 7414	Client/Case no Hanford	SDG K0288	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R604039-20	Client sample id Method Blank		
Dept sample id 7414-020	Material/Matrix	SOLID	
	SAF No RC-025		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-1.16	3.3	6.8	10	U	93A
Gross Beta	12587-47-2	-1.79	3.5	6.1	15	U	93B
Potassium 40	13966-00-2	U		0.25		U	GAM
Cobalt 60	10198-40-0	U		0.029	0.050	U	GAM
Cesium 137	10045-97-3	U		0.025	0.10	U	GAM
Radium 226	13982-63-3	U		0.044	0.10	U	GAM
Radium 228	15262-20-1	U		0.099	0.20	U	GAM
Europium 152	14683-23-9	U		0.071	0.10	U	GAM
Europium 154	15585-10-1	U		0.057	0.10	U	GAM
Europium 155	14391-16-3	U		0.056	0.10	U	GAM
Thorium 228	14274-82-9	U		0.031		U	GAM
Thorium 232	TH-232	U		0.099		U	GAM
Uranium 235	15117-96-1	U		0.092		U	GAM
Uranium 238	U-238	U		3.1		U	GAM
Americium 241	14596-10-2	U		0.079		U	GAM

100BC Remain.Piplns&Sewers-SoilFullP

QC-BLANK #56703

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-23 Method Blank

METHOD BLANK

SDG 7414	Client/Case no Hanford	SDG K0288	
Contact Melissa C. Mannion	Contract No. 630		
Lab sample id R604039-23	Client sample id Method Blank		
Dept sample id 7414-023	Material/Matrix	SOLID	
	SAF No RC-025		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.083	0.13	0.29	1.0	U	SR

100BC Remain.Piplns&Sewers-SoilFullP

QC-BLANK #57535

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-19

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7414

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0288

Contract No. 630

Lab sample id R604039-19

Dept sample id 7414-019

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-025

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	96.7	13	5.4	10		93A	112	4.5	86	68-132	70-130
Gross Beta	115	8.0	5.7	15		93B	118	4.7	97	75-125	70-130
Cobalt 60	2.90	0.20	0.12	0.050		GAM	3.05	0.12	95	76-124	80-120
Cesium 137	3.06	0.18	0.12	0.10		GAM	3.17	0.13	97	76-124	80-120

100BC Remain.Piplns&Sewers-SoilFullP

QC-LCS #56702

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-22

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7414

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0288

Contract No. 630

Lab sample id R604039-22

Dept sample id 7414-022

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-025

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	11.0	0.58	0.25	1.0		SR	9.77	0.39	113	80-120	80-120

100BC Remain.Piplns&Sewers-SoilFullP

QC-LCS #57534

Lab id EBRLNE

Protocol Hanford

Version Ver 1.0

Form DVD-LCS

Version 3.06

Report date 06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-24

J11VL5

DUPLICATE

SDG 7414		Client/Case no Hanford	SDG K0288
Contact Melissa C. Mannion		Contract No. 630	
DUPLICATE	ORIGINAL		
Lab sample id R604039-24	Lab sample id R604039-07	Client sample id J11VL5	
Dept sample id 7414-024	Dept sample id 7414-007	Location/Matrix 100-C-9:2 (1607-B8 & B9)	SOLID
	Received 04/07/06	Collected/Weight 04/05/06 12:40	701 g
% solids 95.8	% solids 95.8	Custody/SAF No RC-025-007	RC-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	18.1	1.1	0.46	1.0		SR	18.3	0.96	0.41		1	24	0.1

100BC Remain.Piplns&Sewers-SoilFullP

QC-DUP#7 57536

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	06/28/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0288

R604039-21

J11VM0

DUPLICATE

SDG	7414			Client/Case no	Hanford SDG K0288
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R604039-21	Lab sample id	R604039-12	Client sample id	J11VM0
Dept sample id	7414-021	Dept sample id	7414-012	Location/Matrix	100-C-9:2 (1607-B8 & B9) SOLID
		Received	04/07/06	Collected/Weight	04/05/06 13:40 760 g
% solids	95.2	% solids	95.2	Custody/SAF No	RC-025-007 RC-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Gross Alpha	4.10	4.5	6.9	10	U	93A	6.31	4.9	6.9	U	-		0.6
Gross Beta	12.7	5.6	9.0	15		93B	16.6	5.6	8.7		27	87	0.9
Potassium 40	7.39	1.3	1.1			GAM	7.94	2.7	0.79		7	67	0.3
Cobalt 60	U		0.084	0.050	U	GAM	U		0.086	U	-		0
Cesium 137	U		0.071	0.10	U	GAM	U		0.074	U	-		0.1
Radium 226	0.399	0.12	0.11	0.10		GAM	0.325	0.16	0.15		20	89	0.7
Radium 228	0.470	0.27	0.31	0.20		GAM	0.597	0.37	0.35		24	133	0.5
Europium 152	U		0.18	0.10	U	GAM	U		0.18	U	-		0
Europium 154	U		0.27	0.10	U	GAM	U		0.24	U	-		0.2
Europium 155	U		0.13	0.10	U	GAM	U		0.21	U	-		0.6
Thorium 228	0.564	0.096	0.10			GAM	0.508	0.12	0.12		10	54	0.6
Thorium 232	0.470	0.27	0.31			GAM	0.597	0.37	0.35		24	133	0.5
Uranium 235	U		0.22		U	GAM	U		0.26	U	-		0.2
Uranium 238	U		9.5		U	GAM	U		8.8	U	-		0.1
Americium 241	U		0.062		U	GAM	U		0.26	U	-		1.5

100BC Remain.Piplns&Sewers-SoilFullP

QC-DUP#12 56704

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	06/28/06

Date: 5 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Site 100-C-9:2
Subject: Wet Chemistry - Data Package No. K0288-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0288 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11VK9	4/5/06	Soil	C	See note 1
J11VL0	4/5/06	Soil	C	See note 1
J11VL1	4/5/06	Soil	C	See note 1
J11VL2	4/5/06	Soil	C	See note 1
J11VL3	4/5/06	Soil	C	See note 1
J11VL4	4/5/06	Soil	C	See note 1
J11VL5	4/5/06	Soil	C	See note 1
J11VL6	4/5/06	Soil	C	See note 1
J11VL7	4/5/06	Soil	C	See note 1
J11VL8	4/5/06	Soil	C	See note 1
J11VL9	4/5/06	Soil	C	See note 1
J11VM0	4/5/06	Soil	C	See note 1
J11VM1	4/5/06	Soil	C	See note 1
J11VM2	4/5/06	Soil	C	See note 1
J11VM3	4/5/06	Soil	C	See note 1
J11VM4	4/5/06	Soil	C	See note 1
J11VM5	4/5/06	Soil	C	See note 1
J11VM6	4/5/06	Soil	C	See note 1
J11VM7	4/5/06	Soil	C	See note 1

1 – Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI. If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less

than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J11VL2/J11VM6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package K0288 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0288	REVIEWER: TLI	Project: 100-C-9:2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Lab: LLI	SDG: K0288																		
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7	
Remarks								orig											
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.5	0.21	U	0.21	U	0.22		0.37		0.22	U	0.50		0.24		0.27		0.22	U
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6	
Remarks																		Duplicate	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q						
Chromium VI	0.5	0.21	U	0.22	U	0.21	U	0.27		0.23		0.33		0.27		0.83		0.25	

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/12/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11VK9	% Solids	94.4	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-002	J11VL0	% Solids	94.0	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-003	J11VL1	% Solids	90.2	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.22	1.0
-004	J11VL2	% Solids	93.9	%	0.01	1.0
		Chromium VI	0.37	MG/KG	0.21	1.0
-005	J11VL3	% Solids	90.9	%	0.01	1.0
		Chromium VI	0.22 u	MG/KG	0.22	1.0
-006	J11VL4	% Solids	94.0	%	0.01	1.0
		Chromium VI	0.50	MG/KG	0.21	1.0
-007	J11VL5	% Solids	95.9	%	0.01	1.0
		Chromium VI	0.24	MG/KG	0.21	1.0
-008	J11VL6	% Solids	96.4	%	0.01	1.0
		Chromium VI	0.27	MG/KG	0.21	1.0
-009	J11VL7	% Solids	92.2	%	0.01	1.0
		Chromium VI	0.22 u	MG/KG	0.22	1.0
-010	J11VL8	% Solids	96.3	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0

9/4/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/12/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J11VL9	% Solids	90.1	%	0.01	1.0
		Chromium VI	0.22 u	MG/KG	0.22	1.0
-012	J11VM0	% Solids	93.8	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-013	J11VM1	% Solids	95.5	%	0.01	1.0
		Chromium VI	0.27	MG/KG	0.21	1.0
-014	J11VM2	% Solids	96.3	%	0.01	1.0
		Chromium VI	0.23	MG/KG	0.21	1.0
-015	J11VM3	% Solids	94.3	%	0.01	1.0
		Chromium VI	0.33	MG/KG	0.21	1.0
-016	J11VM4	% Solids	95.9	%	0.01	1.0
		Chromium VI	0.27	MG/KG	0.21	1.0
-017	J11VM5	% Solids	95.1	%	0.01	1.0
		Chromium VI	0.83	MG/KG	0.21	1.0
-018	J11VM6	% Solids	94.4	%	0.01	1.0
		Chromium VI	0.25	MG/KG	0.21	1.0
-019	J11VM7	% Solids	100	%	0.01	1.0

9/4/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-025 K0288
LVL#: 0604L713

W.O.#: 11343-606-001-9999-00
Date Received: 04-07-06

INORGANIC NARRATIVE

1. This narrative covers the analyses of 19 soil samples.

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

   LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

3. Sample holding times as required by the method and/or contract were met.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. The method blank for Chromium VI was within the method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analysis for Percent Solids was within the 20% Relative Percent Difference (RPD) control limit however replicate analysis for Chromium VI was outside the control limit that may be attributed sample inhomogeneity.

9. Results for solid samples are reported on a dry weight basis.

10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/24/06
Date

njp\i04-713

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 18 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code: Air Quality	Data Turnaround: 21 days		
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9)	SAF No.: RC-025	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060351	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	500mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Chlorp-Herbicides - KFA0191~~					
Sample No.	Matrix *	Sample Date	Sample Time								
J11VK9	SOIL	04/05/06	1030	✓	✓	✓	✓		✓		
J11VL0	SOIL	04/05/06	1035	✓	✓	✓	✓		✓		
J11VL1	SOIL	04/05/06	1050	✓	✓	✓	✓		✓		
J11VL2	SOIL	04/05/06	1054	✓	✓	✓	✓		✓		
J11VL3	SOIL	04/05/06	1225	✓	✓	✓	✓		✓		

04/05/06

000015

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.R. Edmundson	4-6-06 0930
T.R. Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	[illegible]	4-7-06 0920

SPECIAL INSTRUCTIONS

~~(2) addition to item # 1. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~

04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *: S=Soil, SE=Sediment, SO=Solid, Sl=Sludge, W=Water, O=Oil, A=Air, DS=Drum Solids, DL=Drum Liquids, T=Tissue, Wi=Wipe, L=Liquid, V=Vegetation, X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4 10

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code	Data Turnaround
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9)		SAF No.: RC-025	Air Quality	21 days
Ice Chest No. #FS-04-052	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex		
Shipped To: EBERLINE SERVICES, HONVILLE	Offsite Property No.: A060351		Bill of Lading/Air Bill No.: SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; ~~Chlorinated Herbicides - 8151~~					

000016

Sample No.	Matrix *	Sample Date	Sample Time										
J11VL4	SOIL	04/05/06	1235	✓	✓	✓	✓		✓				
J11VL5	SOIL	04/05/06	1240	✓	✓	✓	✓		✓				
J11VL6	SOIL	04/05/06	1245	✓	✓	✓	✓		✓				
J11VL7	SOIL	04/05/06	1250	✓	✓	✓	✓		✓				
J11VL8	SOIL	04/05/06	1300	✓	✓	✓	✓		✓				

04/05/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	1630 4-5-06	3728 Ref 2A	1630 4-5-06
3728 #2A	4-6-06 0930	T.B. Calagundsen / JR Elmendorf	4-6-06 0930
TR Calagundsen / JR Elmendorf	4-6-06 1500	FED EX	
FED EX	4-7-06 1020	D Smith	4-7-06 1020

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to Relinquish samples from 3728 Ref #2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 2

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code	Data Turnaround
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025	Air Quality	21 days
Ice Chest No. AFS-04-051	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To FIBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	500mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081; ~~Chloro Herbicides - TP-18137~~ 04/05/06					

000017

Sample No.	Matrix *	Sample Date	Sample Time									
J11VL9	SOIL	04/05/06	1330	✓	✓	✓	✓		✓			
J11VM0	SOIL	04/05/06	1340	✓	✓	✓	✓		✓			
J11VM1	SOIL	04/05/06	1415	✓	✓	✓	✓		✓			
J11VM2	SOIL	04/05/06	1420	✓	✓	✓	✓		✓			
J11VM3	SOIL	04/05/06	1450	✓	✓	✓	✓		✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Rm 2A	4-5-06 1630
3728 #2A	4-6-06 0930	J.E. Edmundson	4-6-06 0930
J.E. Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	D.J. Miller	4-7-06 0920

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}, Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S=Soil
SL=Sediment
SO=Solid
Sl=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
FT=Tissue
WI=Wipe
L=Liquid
V=Vegetation
S=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1
Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez; Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH	Price Code: Air Quality; Data Turnaround: 21 days
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9)	SAF No.: RC-025	
Ice Chest No.: ERC-99-062	Field Logbook No.: EL-1585-5; COA: R100C92000	Method of Shipment: fed ex	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060351	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

000018

SAMPLE ANALYSIS

Preservation				None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C			
Type of Container				G/P	G/P	aG	aG	G/P	aG			
No. of Container(s)				1	1	1	1	1	1			
Volume				250g	250g	250mL	250mL	500mL	250mL			
				See item (1) in Special Instructions	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; ~~Chloro-Herbicides - 8151~~			
Sample No.	Matrix *	Sample Date	Sample Time									
J11VM4	SOIL	04/05/06	1455	✓	✓	✓	✓		✓			
J11VM5	SOIL	04/05/06	1500	✓	✓	✓	✓		✓			
J11VM6	SOIL	04/05/06	1058	✓	✓	✓	✓		✓			
J11VM7	SOIL	04/05/06	1052	✓	N/A	N/A	✓		N/A			

04/05/06

04/05/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.R. Edmondson / T.R. Edmondson	4-6-06 0930
T.R. Edmondson / T.R. Edmondson	4-6-06 1500	FED EX	
[illegible]	4-7-06 10920	[illegible]	4-7-06/0920

SPECIAL INSTRUCTIONS 04/05/06

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
C=Cake
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-C-9:2		DATA PACKAGE:	K0288	
VALIDATOR:	TLF	LAB:	LLI	DATE:	9/2/06
			SDG:	K0288	

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX					
J11VK9	J11VL0	J11VL1	J11VL2	J11VL3	J11VL4
J11VL5	J11VL6	J11VL7	J11VL8	J11VL9	J11VM0
J11VM1	J11VM2	J11VM3	J11VM4	J11VM5	J11VM6
~~J11VM7~~ 9/2/06					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Spike samples analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

Sike standards NIST traceable? (Levels D, E) ..... Yes No N/A

Spike standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No ~~N/A~~

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: L2/M4

6. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses?..... Yes No N/A

Results supported in the raw data? (Levels D, E)..... Yes No N/A

Samples properly prepared? (Levels D, E)..... Yes No N/A

Detection limits meet RDL?..... Yes No N/A

Transcription/calculation errors? (Levels D, E)..... Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/12/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	06LVI024-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/12/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-004	J11VL2	Soluble Chromium VI	4.1	0.37	4.3	88.7	1.0
		Insoluble Chromium VI	1130	0.37	1050	108.1	100
BLANK10	06LVI024-MB1	Soluble Chromium VI	4.0	0.20u	4.0	101.2	1.0
		Insoluble Chromium VI	1230	0.20u	1040	117.7	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/12/06

CLIENT: TMUHANFORD RC-025 X0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-004REP	J11VL2	Chromium VI	0.37	0.21u	~~NC~~ 75.1	1.0
-013REP	J11VM1	% Solids	95.5	96.6	1.1	1.0

Date: 5 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100BC Remaining Pipeline & Sewers – Soil Full Protocol - Waste Site 100-C-9:2
Subject: Pesticide/PCB - Data Package No. K0288-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0288 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11VK9	4/5/06	Soil	C	See note 1
J11VL0	4/5/06	Soil	C	See note 1
J11VL1	4/5/06	Soil	C	See note 1
J11VL2	4/5/06	Soil	C	See note 1
J11VL3	4/5/06	Soil	C	See note 1
J11VL4	4/5/06	Soil	C	See note 1
J11VL5	4/5/06	Soil	C	See note 1
J11VL6	4/5/06	Soil	C	See note 1
J11VL7	4/5/06	Soil	C	See note 1
J11VL8	4/5/06	Soil	C	See note 1
J11VL9	4/5/06	Soil	C	See note 1
J11VM0	4/5/06	Soil	C	See note 1
J11VM1	4/5/06	Soil	C	See note 1
J11VM2	4/5/06	Soil	C	See note 1
J11VM3	4/5/06	Soil	C	See note 1
J11VM4	4/5/06	Soil	C	See note 1
J11VM5	4/5/06	Soil	C	See note 1
J11VM6	4/5/06	Soil	C	See note 1

1 – Pesticides by 8081A & PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

- **Holding Times**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are

outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

Due to surrogate recoveries outside QC limits, all detected PCB results in samples J11VK9, J11VL3 and J11VL9 were qualified as estimates and flagged "J".

Due to surrogate interference, all pesticide results in sample J11VL9 were qualified as estimates and flagged "J".

Due to a surrogate recovery outside QC limits (128%), all detected pesticide results in sample J11VM3 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of

specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike or matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

Due to RPDs outside QC limits, all delta-BHC (33%), 4,4-DDE (33%), 4,4-DDT (46%) and methoxyclor (43%) results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J11VL2/J11VM6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data Package No. K0288 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

- Due to the lack of a matrix spike, matrix spike duplicate or LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

- Due to surrogate recoveries outside QC limits, all detected PCB results in samples J11VK9, J11VL3 and J11VL9 were qualified as estimates and flagged "J".

- Due to surrogate interference, all pesticide results in sample J11VL9 were qualified as estimates and flagged "J".

- Due to a surrogate recovery outside QC limits (128%), all detected pesticide results in sample J11VM3 were qualified as estimates and flagged "J".

- Due to RPDs outside QC limits, all delta-BHC (33%), 4,4-DDE (33%), 4,4-DDT (46%) and methoxyclor (43%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All toxaphene results exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

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Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K0288	REVIEWER: TLI	Project: 100-C-9:2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS
Aroclor-1254	J	J11VK9, J11VL3 J11VL9	Surrogate recovery
All pesticides	J	J11VL9	Surrogate interference
gamma-Chlordane Endosulfan I 4,4-DDE Endosulfan sulfate	J	J11VM3	Surrogate recovery
delta-BHC 4,4-DDE 4,4-DDT Methoxyclor	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0288																		
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7	
Remarks								orig											
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Extraction Date		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06	
Analysis Date		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	100	14	U	14	U	15	U	14	U	15	U	14	U	14	U	14	U	14	U
Aroclor-1221	100	14	U	14	U	15	U	14	U	15	U	14	U	14	U	14	U	14	U
Aroclor-1232	100	14	U	14	U	15	U	14	U	15	U	14	U	14	U	14	U	14	U
Aroclor-1242	100	14	U	14	U	15	U	14	U	15	U	14	U	14	U	14	U	14	U
Aroclor-1248	100	14	U	14	U	15	U	14	U	15	U	14	U	14	U	14	U	14	U
Aroclor-1254	100	5.5	J	15		40		11		6.8	J	14	U	14	U	20		18	
Aroclor-1260	100	14	U	14	U	15	U	14	U	15	U	14	U	14	U	14	U	14	U
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7	
Remarks								orig											
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Extraction Date		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06	
Analysis Date		4/24/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Gamma-BHC (Lindane)	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Beta-BHC	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Heptachlor	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Delta-BHC	5	1.4	UJ	1.4	UJ	1.5	UJ	1.4	UJ	1.5	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Aldrin	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Heptachlor Epoxide	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
gamma-Chlordane	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan I	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
alpha-Chlordane	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDE	5	1.4	UJ	0.53	J	1.2	J	1.4	UJ	1.5	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Dieldrin	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Endrin	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDD	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan II	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDT	5	1.4	UJ	1.4	UJ	1.5	UJ	1.4	UJ	1.5	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Endrin Aldehyde	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan sulfate	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Methoxyclor	5	1.4	UJ	1.4	UJ	1.5	UJ	1.4	UJ	1.5	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Endrin Ketone	5	1.4	U	1.4	U	1.5	U	1.4	U	1.5	U	1.4	U	1.4	U	1.4	U	1.4	U
Toxaphene	5	14	UJ	14	UJ	15	UJ	14	UJ	15	UJ	14	UJ	14	UJ	14	UJ	14	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0288																		
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6	
Remarks																		Duplicate	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Extraction Date		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06	
Analysis Date		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06		4/21/06	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	100	14	U	15	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U
Aroclor-1221	100	14	U	15	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U
Aroclor-1232	100	14	U	15	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U
Aroclor-1242	100	14	U	15	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U
Aroclor-1248	100	14	U	15	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U
Aroclor-1254	100	27		7.4	J	14	U	39		4.2		100		13		120		8.5	
Aroclor-1260	100	14	U	15	U	14	U	14	U	14	U	14	U	14	U	14	U	14	U
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6	
Remarks																		Duplicate	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Extraction Date		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06		4/14/06	
Analysis Date		4/24/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06		5/3/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Gamma-BHC (Lindane)	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Beta-BHC	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Heptachlor	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Delta-BHC	5	1.4	UJ	1.5	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Aldrin	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Heptachlor Epoxide	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
gamma-Chlordane	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.5	J	1.4	U	1.6		1.4	U
Endosulfan I	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	0.64	J	1.4	U	1.4	U	1.4	U
alpha-Chlordane	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDE	5	1.4	UJ	14	J	1.4	UJ	0.70	J	1.4	UJ	4.5	J	1.4	UJ	2.6	J	1.4	UJ
Dieldrin	5	1.7		1.5	UJ	1.4	U	9.9		1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endrin	5	1.4	U	3.6	J	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDD	5	1.4	U	3.5	J	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan II	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
4,4'-DDT	5	1.4	UJ	5.1	J	1.0	J	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Endrin Aldehyde	5	0.97		2.9	J	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
Endosulfan sulfate	5	1.4	U	1.5	UJ	1.4	U	1.4	U	1.4	U	3.7	J	1.4	U	3.6		1.4	U
Methoxyclor	5	1.4	UJ	1.5	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ	1.4	UJ
Endrin Ketone	5	1.4	U	1.5	UJ	0.43		1.4	U	1.4	U	1.4	U	1.4	U	0.74		1.4	U
Toxaphene	5	14	UJ	15	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/02/06 13:53

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 1

	Cust ID:	J11VK9	J11VK9	J11VK9	J11VL0	J11VL1	J11VL2
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	126 * %	123 * %	122 * %	112 %	105 %	112 %
	Decachlorobiphenyl	115 %	116 %	115 %	109 %	96 %	105 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	114 %	112 %	14 U	15 U	14 U
Aroclor-1221		14 U	14 U	14 U	14 U	15 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	15 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	15 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	15 U	14 U
Aroclor-1254		5.5 ~~U~~ J	I	I	15 J	40	11 J
Aroclor-1260		14 U	104 %	103 %	14 U	15 U	14 U

	Cust ID:	J11VL3	J11VL4	J11VL5	J11VL6	J11VL7	J11VL8
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	119 * %	121 * %	115 %	103 %	106 %	90 %
	Decachlorobiphenyl	112 %	112 %	106 %	96 %	101 %	109 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1221		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		6.8 ~~U~~ J	14 U	14 U	20	18 J	27
Aroclor-1260		15 U	14 U	14 U	14 U	14 U	14 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

R 9/4/06

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000014

PCBs by GC

Report Date: 05/02/06 13:53

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 2

	Cust ID:	J11VL9	J11VM0	J11VM1	J11VM2	J11VM3	J11VM4
Sample Information	RFW#:	011	012	013	014	015	016
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	78 %	84 %	92 %	83 %	94 %	85 %
	Decachlorobiphenyl	185 * %	95 %	104 %	93 %	93 %	83 %
Aroclor-1016		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1221		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		15 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		7.4 ~~U~~ J	14 U	39	4.2 J	100	13 J
Aroclor-1260		15 U	14 U	14 U	14 U	14 U	14 U

	Cust ID:	J11VM5	J11VM6	PBLKFQ	PBLKFQ BS
Sample Information	RFW#:	017	018	06LE0285-MB1	06LE0285-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	91 %	85 %	117 %	108 %
	Decachlorobiphenyl	91 %	87 %	106 %	98 %
Aroclor-1016		14 U	14 U	13 U	107 %
Aroclor-1221		14 U	14 U	13 U	13 U
Aroclor-1232		14 U	14 U	13 U	13 U
Aroclor-1242		14 U	14 U	13 U	13 U
Aroclor-1248		14 U	14 U	13 U	13 U
Aroclor-1254		120	8.5 J	13 U	13 U
Aroclor-1260		14 U	14 U	13 U	95 %

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9/4/06

5/2/06

000000006

000015

Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/04/06 16:44

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 1

000000006

	Cust ID:	J11VK9	J11VK9	J11VK9	J11VL0	J11VL1	J11VL2
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	124 * %	108 %	117 %	109 %	99 %	109 %
	Decachlorobiphenyl	121 %	106 %	124 * %	120 %	108 %	118 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.4 U	85 %	102 %	1.4 U	1.5 U	1.4 U
gamma-BHC (Lindane)		1.4 U	86 %	106 %	1.4 U	1.5 U	1.4 U
Beta-BHC		1.4 U	85 %	104 %	1.4 U	1.5 U	1.4 U
Heptachlor		1.4 U	88 %	104 %	1.4 U	1.5 U	1.4 U
Delta-BHC		1.4 U J	65 %	91 %	1.4 U J	1.5 U J	1.4 U J
Aldrin		1.4 U	80 %	99 %	1.4 U	1.5 U	1.4 U
Heptachlor epoxide		1.4 U	84 %	105 %	1.4 U	1.5 U	1.4 U
gamma-Chlordane		1.4 U	83 %	104 %	1.4 U	1.5 U	1.4 U
Endosulfan I		1.4 U	82 %	104 %	1.4 U	1.5 U	1.4 U
alpha-Chlordane		1.4 U	85 %	106 %	1.4 U	1.5 U	1.4 U
4,4'-DDE		1.4 U J	71 %	99 %	0.53 J	1.2 J	1.4 U J
Dieldrin		1.4 U	79 %	100 %	1.4 U	1.5 U	1.4 U
Endrin		1.4 U	83 %	103 %	1.4 U	1.5 U	1.4 U
4,4'-DDD		1.4 U	73 %	96 %	1.4 U	1.5 U	1.4 U
Endosulfan II		1.4 U	86 %	104 %	1.4 U	1.5 U	1.4 U
4,4'-DDT		1.4 U J	63 %	101 %	1.4 U J	1.5 U J	1.4 U J
Endrin aldehyde		1.4 U	82 %	104 %	1.4 U	1.5 U	1.4 U
Endosulfan sulfate		1.4 U	80 %	101 %	1.4 U	1.5 U	1.4 U
Methoxychlor		1.4 U J	72 %	112 %	1.4 U J	1.5 U J	1.4 U J
Endrin ketone		1.4 U	86 %	109 %	1.4 U	1.5 U	1.4 U
Toxaphene		14 U J	14 U	14 U	14 U J	15 U J	14 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000016

9/4/06

5/8/6

Pesticide/PCBs by GC, CLP List

Report Date: 05/04/06 16:44

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 2

Cust ID:	J11VL3	J11VL4	J11VL5	J11VL6	J11VL7	J11VL8
Sample Information RFW#:	005	006	007	008	009	010
Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene	119 * %	115 %	108 %	111 %	112 %	118 %
Decachlorobiphenyl	127 * %	126 * %	113 %	110 %	115 %	122 %
	fl	fl	fl	fl	fl	fl
Alpha-BHC	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
gamma-BHC (Lindane)	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Beta-BHC	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Heptachlor	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Delta-BHC	1.5 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Aldrin	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Heptachlor epoxide	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
gamma-Chlordane	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Endosulfan I	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
alpha-Chlordane	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
4,4'-DDE	1.5 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Dieldrin	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.7
Endrin	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
4,4'-DDD	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Endosulfan II	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
4,4'-DDT	1.5 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Endrin aldehyde	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	0.97 J
Endosulfan sulfate	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Methoxychlor	1.5 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Endrin ketone	1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Toxaphene	15 U J	14 U J	14 U J	14 U J	14 U J	14 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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9/4/06

Pesticide/PCBs by GC, CLP List

Report Date: 05/04/06 16:44

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 3

	Cust ID:	J11VL9	J11VM0	J11VM1	J11VM2	J11VM3	J11VM4
Sample Information	RFW#:	011	012	013	014	015	016
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	111 %	96 %	117 %	108 %	128 * %	111 %
	Decachlorobiphenyl	I %	104 %	117 %	99 %	114 %	105 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.5 U J	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
gamma-BHC (Lindane)		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Beta-BHC		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Heptachlor		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Delta-BHC		1.5 U	1.4 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Aldrin		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Heptachlor epoxide		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
gamma-Chlordane		1.5 U	1.4 U	1.4 U	1.4 U	1.5 J	1.4 U
Endosulfan I		1.5 U	1.4 U	1.4 U	1.4 U	0.64 J	1.4 U
alpha-Chlordane		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
4,4'-DDE		14	1.4 U J	0.70 J	1.4 U J	4.5 J	1.4 U J
Dieldrin		1.5 U	1.4 U	9.9	1.4 U	1.4 U	1.4 U
Endrin		3.6	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
4,4'-DDD		3.5	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Endosulfan II		1.5 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
4,4'-DDT		5.1	1.0 J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Endrin aldehyde		2.9	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Endosulfan sulfate		1.5 U	1.4 U	1.4 U	1.4 U	3.7 J	1.4 U
Methoxychlor		1.5 U	1.4 U J	1.4 U J	1.4 U J	1.4 U J	1.4 U J
Endrin ketone		1.5 U	0.43 J	1.4 U	1.4 U	1.4 U	1.4 U
Toxaphene		15 U	14 U J	14 U J	14 U J	14 U J	14 U J

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9/4/06

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Lionville Laboratory, Inc.

Pesticide/PCBs by GC, CLP List

Report Date: 05/04/06 16:44

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 4

	Cust ID:	J11VM5		J11VM6		PBLKFQ		PBLKFQ BS	
Sample Information	RFW#:	017		018		06LE0285-MB1		06LE0285-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	4.00		4.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	116	%	116	%	96	%	87	%
	Decachlorobiphenyl	112	%	109	%	98	%	94	%
		fl		fl		fl		fl	
Alpha-BHC		1.4	U	1.4	U	0.33	U	94	%
gamma-BHC (Lindane)		1.4	U	1.4	U	0.33	U	93	%
Beta-BHC		1.4	U	1.4	U	0.33	U	92	%
Heptachlor		1.4	U	1.4	U	0.33	U	93	%
Delta-BHC		1.4	U J	1.4	U J	0.33	U	82	%
Aldrin		1.4	U	1.4	U	0.33	U	90	%
Heptachlor epoxide		1.4	U	1.4	U	0.33	U	95	%
gamma-Chlordane		1.6		1.4	U	0.33	U	93	%
Endosulfan I		1.4	U	1.4	U	0.33	U	95	%
alpha-Chlordane		1.4	U	1.4	U	0.33	U	93	%
4,4'-DDE		2.6	J	1.4	U J	0.33	U	97	%
Dieldrin		1.4	U	1.4	U	0.33	U	98	%
Endrin		1.4	U	1.4	U	0.33	U	105	%
4,4'-DDD		1.4	U	1.4	U	0.33	U	100	%
Endosulfan II		1.4	U	1.4	U	0.33	U	94	%
4,4'-DDT		1.4	U J	1.4	U J	0.33	U	106	%
Endrin aldehyde		1.4	U	1.4	U	0.33	U	88	%
Endosulfan sulfate		3.6		1.4	U	0.33	U	97	%
Methoxychlor		1.4	U J	1.4	U J	0.33	U	110	%
Endrin ketone		0.74	J	1.4	U	0.33	U	97	%
Toxaphene		14	U J	14	U J	3.3	U	3.3	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-025
LVL #: 0604L713
SDG/SAF # K0288/RC-025

W.O. #: 11343-606-001-9999-00
Date Received: 04-07-2006

PCB

Eighteen (18) soil samples were collected on 04-05-2006.

The samples and their associated QC samples were extracted on 04-14-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-21,24-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted and analyzed within required holding time.

2. The samples and their associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.

3. The method blank was below the reporting limits for all target compounds.

4. Six (6) of forty-four (44) surrogate recoveries were outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).

5. The blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. The results for soil samples were reported on a dry-weight basis.

8. The initial calibrations associated with this data set were within acceptance criteria.

9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 1 3 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

LIONVILLE LABORATORY INC.

10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/4/6
Date

som\r:\group\data\pest\tnu hanford\0604-713.pcbs

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-025
LVL #: 0604L713
SDG/SAF # K0288/RC-025

W.O. #: 11343-606-001-9999-00
Date Received: 04-07-2006

CHLORINATED PESTICIDES

Eighteen (18) soil samples were collected on 04-05-2006.

The samples and their associated QC samples were extracted on 04-14-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 04-20,24-2006 and 05-03-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A. All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted and analyzed within required holding time.

2. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.

3. The method blank was below the reporting limits for all target compounds.

4. Six (6) of forty-four (44) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR #06GC143) has been enclosed.

5. All blank spike recoveries were within acceptance criteria.

6. All matrix spike recoveries were within acceptance criteria.

7. All samples required a 4-fold dilution due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.

8. The initial calibrations associated with this data set were within acceptance criteria.

9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 16 pages.

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LIONVILLE LABORATORY INC.

10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.

Judy Strm

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/9/06
Date

kim\r:\group\data\pest\tnu hanford\0604713..pst

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 0000173

Initiator: KBW
Date: 5/5/06
Client: TW

Batch: 0604L713
Samples: 001, 001T, 005, 006, 015
Method: SW846/MCAWW/CLP/

Parameter: PEST
Matrix: SOIL
Prep Batch: 06LL0286

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Surrogate recoveries were high in several samples.

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Narrate & report

4. Project Manager Instructions...signature/date: 5/9/06

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 5/8/06 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code Air Quality	Data Turnaround 21 days
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025		
Ice Chest No. AFS-04-052	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250g	250g	250mL	250mL	500mL	250mL				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Chloro-Herbicides - EPA8151~~				
J11VK9	SOIL	04/05/06	1030	✓	✓	✓	✓		✓				
J11VL0	SOIL	04/05/06	1035	✓	✓	✓	✓		✓				
J11VL1	SOIL	04/05/06	1050	✓	✓	✓	✓		✓				
J11VL2	SOIL	04/05/06	1054	✓	✓	✓	✓		✓				
J11VL3	SOIL	04/05/06	1225	✓	✓	✓	✓		✓				

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.R. Edmundson	4-6-06 0930
T.R. Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	D. Smith	4-7-06 0920

Sign/Print Names

SPECIAL INSTRUCTIONS

~~(2) addition to item # 3. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~

04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025
Ice Chest No. HFS-04-052	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A06035 1		Bill of Lading/Air Bill No. SEE OSPC

Price Code: Air Quality

Data Turnaround: 21 days

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions. 04/05/06	Pesticides - 8081; ~~Chloro-Herbicides - 8151~~ 04/05/06					

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Sample No.	Matrix *	Sample Date	Sample Time										
J11VL4	SOIL	04/05/06	1235	✓	✓	✓	✓		✓				
J11VL5	SOIL	04/05/06	1240	✓	✓	✓	✓		✓				
J11VL6	SOIL	04/05/06	1245	✓	✓	✓	✓		✓				
J11VL7	SOIL	04/05/06	1250	✓	✓	✓	✓		✓				
J11VL8	SOIL	04/05/06	1300	✓	✓	✓	✓		✓				

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Kevin Singleton	1630 4-5-06	Received By/Stored In: 3728 Ref 2A	1630 4-5-06
Relinquished By/Removed From: 3728 #2A	4-6-06 0930	Received By/Stored In: T.B. Lalgundsen / SR Ellmaker	4-6-06 0930
Relinquished By/Removed From: T.B. Lalgundsen / SR Ellmaker	WCH 4-6-06 1500	Received By/Stored In: FED EX	
Relinquished By/Removed From: FED EX	4-7-06 1020	Received By/Stored In: D Smith	4-7-06 1020
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to Relinquish samples from 3728 Ref #2A on 4/6/06

Matrix *

SoSoil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
Air=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
O=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code: Air Quality	Data Turnaround: 21 days		
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9)	SAF No.: RC-025	
Ice Chest No.: AFS-04-051	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060351	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250g	250g	250mL	250mL	500mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081; ~~Chloro-Herbicides - 8151~~ 04/05/06				

820000

Sample No.	Matrix *	Sample Date	Sample Time									
J11VL9	SOIL	04/05/06	1330	✓	✓	✓	✓		✓			
J11VM0	SOIL	04/05/06	1340	✓	✓	✓	✓		✓			
J11VM1	SOIL	04/05/06	1415	✓	✓	✓	✓		✓			
J11VM2	SOIL	04/05/06	1420	✓	✓	✓	✓		✓			
J11VM3	SOIL	04/05/06	1450	✓	✓	✓	✓		✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3722 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.E. Edmundson / JC Edmundson	4-6-06 0930
T.E. Edmundson / JC Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	D. J. Smith	4-7-06 0920

SPECIAL INSTRUCTIONS

~~(3) addition to item # 2 Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}, Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S-Soil
SE-Sediment
SO-Solid
SL-Sludge
W = Water
O-Oil
A-Air
DS-Drum Solids
DL-Drum Liquids
T-Tissue
WI-Wipe
L-Liquid
V-Vegetation
X-Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code Air Quality	Data Turnaround 21 days
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025		
Ice Chest No. ERC-99-062	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	500mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081; ~~Chlorinated Herbicides - 8041A~~					

620000

Sample No.	Matrix *	Sample Date	Sample Time									
J11VM4	SOIL	04/05/06	1455	✓	✓	✓	✓		✓			
J11VM5	SOIL	04/05/06	1500	✓	✓	✓	✓		✓			
J11VM6	SOIL	04/05/06	1058	✓	✓	✓	✓		✓			
J11VM7	SOIL	04/05/06	1052	✓	N/A	N/A	✓		N/A			

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-06 1630
3728 Ref 2A	4-6-06 0930	T.A. Edmondson	4-6-06 0930
T.A. Edmondson	4-6-06 1500	FED EX	
FED EX	4-7-06 10920	[illegible]	4-7-06/0920

SPECIAL INSTRUCTIONS 04/05/06

~~(2) addition to item # 2: Run gross alpha and gross beta off available material.~~

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S-Soil
SE-Sediment
SO-Solid
Sl-Sludge
W-Water
O-Oil
A-Air
DS-Drum Solids
DL-Drum Liquids
T-Tissue
WI-Wipe
L-Liquid
V-Vegetation
O-Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-C-9:2			DATA PACKAGE: K0288		
VALIDATOR: TLI		LAB: LLI		DATE: 9/2/06	
			SDG: K0288		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J11VK9	J11VL0	J11VL1	J11VL2	J11VL3	J11VL4
J11VL5	J11VL6	J11VL7	J11VL8	J11VL9	J11VM0
J11VM1	J11VM2	J11VM3	J11VM4	J11VM5	J11VM6
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments: _____

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations acceptable? ..... Yes No (N/A)

Continuing calibrations acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

DDT and endrin breakdowns acceptable? ..... Yes No (N/A)

Comments: _____

PCB DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A

Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

Surrogates analyzed? ..... Yes No N/A

Surrogate recoveries acceptable? ..... Yes No N/A

Surrogates traceable? (Levels D, E) ..... Yes No N/A

Surrogates expired? (Levels D, E) ..... Yes No N/A

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: ~~Surr PCB~~ no PAS

Surr PCB detects in K9, L3, L9 – J

Surr Post Interbn – J all in L9

" detects in M3

no duplicate MS/MSD/LCS

PCB DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: delta BHC - (33%) 4,4-DDE - (33%) > J all
4,4-DDT - (46%) methoxychlor (43%)

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A

Positive results resolved acceptably? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: all toxaphene over

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

Check recoveries acceptable? ..... Yes No N/A

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 5 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Sites 100-C-9:2
Subject: Inorganics - Data Package No. K0288-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0288 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11VK9	4/5/06	Soil	C	See note 1
J11VL0	4/5/06	Soil	C	See note 1
J11VL1	4/5/06	Soil	C	See note 1
J11VL2	4/5/06	Soil	C	See note 1
J11VL3	4/5/06	Soil	C	See note 1
J11VL4	4/5/06	Soil	C	See note 1
J11VL5	4/5/06	Soil	C	See note 1
J11VL6	4/5/06	Soil	C	See note 1
J11VL7	4/5/06	Soil	C	See note 1
J11VL8	4/5/06	Soil	C	See note 1
J11VL9	4/5/06	Soil	C	See note 1
J11VM0	4/5/06	Soil	C	See note 1
J11VM1	4/5/06	Soil	C	See note 1
J11VM2	4/5/06	Soil	C	See note 1
J11VM3	4/5/06	Soil	C	See note 1
J11VM4	4/5/06	Soil	C	See note 1
J11VM5	4/5/06	Soil	C	See note 1
J11VM6	4/5/06	Soil	C	See note 1
J11VM7	4/5/06	Soil	C	See note 1

1 - ICP metals (6010B) and mercury (7471A).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

Due to method blank contamination, all boron results (except J11VM5) were qualified as estimates and flagged "UJ".

Due to method blank contamination, the lithium result in sample J11VM7 was qualified as an estimate and flagged "UJ".

Due to method blank contamination, all detected tin results (J11VL3, J11VL8, J11VL9 and J11VM5) were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One equipment blank (J11VM7) was submitted for analysis. Aluminum, barium, beryllium, calcium, chromium, iron, potassium, magnesium, manganese, sodium, phosphorous, silicon, strontium, titanium, zinc and zirconium were detected in the method blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (59.4%), all phosphorous results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (55.9%), all antimony results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (43.9%), all silicon results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and

the RPD is less than 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J11VL2/J11VM6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K0288 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, all boron results (except J11VM5) were qualified as estimates and flagged "UJ".

- Due to method blank contamination, the lithium result in sample J11VM7 was qualified as an estimate and flagged "UJ".

- Due to method blank contamination, all detected tin results (J11VL3, J11VL8, J11VL9 and J11VM5) were qualified as estimates and flagged "UJ".

- Due to a matrix spike recovery outside QC limits (59.4%), all phosphorous results were qualified as estimates and flagged "J".

- Due to a matrix spike recovery outside QC limits (55.9%), all antimony results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (43.9%), all silicon results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K0288	REVIEWER: TLI	Project: 100-C-9:2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Boron	UJ	All except J11VM5	Blank contamination
Lithium	UJ	J11VM7	Blank contamination
Tin	UJ	J11VL3, J11VL8 J11VL9, J11VM5	Blank contamination
Antimony Phosphorous	J	All	MS recovery
Silicon	J	All	LCS recovery

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																					
Lab: LLI	SDG: K0288																				
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7			
Remarks								orig													
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06			
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U		
Aluminum		6580		5570		5080		5320		5420		4960		3590		5390		4800			
Arsenic	10	2.8		2.6		2.3		2.5		3.4		2.4		1.6		2.9		2.7			
Boron		1.5	UJ	1.4	UJ	1.9	UJ	1.2	UJ	1.3	UJ	0.64	UJ	0.34	UJ	1.4	UJ	1.1	UJ		
Barium	2	81.6		55.4		55.7		55.2		61.1		48.7		36.4		59.9		45.9			
Beryllium		0.45		0.38		0.48		0.50		0.56		0.38		0.33		0.37		0.37			
Calcium		4290		3540		3670		4160		4260		4720		4520		7640		7010			
Cadmium	0.2	0.14		0.07	U	0.07	U	0.07	U	0.07	U	0.24		0.22		0.26		0.22			
Cobalt		7.6		6.7		7.2		7.5		7.6		8.1		7.0		6.8		6.8			
Chromium	1	11.0		9.1		7.1		7.8		7.9		6.5		4.0		7.9		8.2			
Copper		14.7		13.7		14.2		14.4		13.6		15.5		14.9		17.1		15.5			
Iron		19800		18800		17100		19500		19400		20100		20400		18900		18200			
Mercury	0.2	0.01	U	0.01	U	0.02	U	0.01	U	0.02	U	0.02	U	0.01	U	0.04		0.02	U		
Potassium		1280		992		908		944		1170		876		581		1170		901			
Lithium		7.0		6.0		4.9		5.0		5.1		5.1		3.4		8.5		6.0			
Magnesium		4250		3970		3710		4020		3850		3960		3460		4280		4370			
Manganese		370		302		333		338		370		332		280		324		280			
Molybdenum		0.37		0.43		0.34		0.46		0.37		0.34		0.29		0.43		0.43			
Sodium		122		110		94.1		137		98.7		116		99.8		194		137			
Nickel		11.8		11.6		9.1		9.6		9.0		9.5		7.4		10.4		11.8			
Phosohorous		872	J	831	J	898	J	841	J	887	J	1020	J	1240	J	964	J	960	J		
Lead	5	6.0		4.8		7.7		10.8		6.8		5.6		7.4		14.2		5.2			
Antimony		0.44	UJ	0.44	UJ	0.46	UJ	0.43	UJ	0.45	UJ	0.43	UJ	0.42	UJ	0.42	UJ	0.44	UJ		
Selenium	1	0.47	U	0.47	U	0.49	U	0.46	U	0.48	U	0.46	U	0.45	U	0.45	U	0.47	U		
Silicon		475	J	403	J	484	J	383	J	447	J	376	J	301	J	428	J	374	J		
Tin		1.1	U	1.1	U	1.1	U	1.1	U	1.1	UJ	1.1	U	1.0	U	1.0	U	1.1	U		
Strontium		22.5		19.6		19.7		20.7		19.3		18.5		19.0		24.8		24.8			
Titanium		1290		1460		1290		1560		1530		1570		1920		1360		1300			
Thallium		0.70	U	0.70	U	0.73	U	0.69	U	0.71	U	0.69	U	0.68	U	0.67	U	0.70	U		
Uranium		0.88	U	0.87	U	0.91	U	0.87	U	0.90	U	0.87	U	0.85	U	0.85	U	0.88	U		
Vanadium		45.6		47.6		37.9		48.9		49.4		46.5		51.4		42.6		37.7			
Zinc	1	44.6		37.6		37.4		40.0		43.9		38.7		35.8		51.7		39.1			
Zirconium		19.5		18.4		23.8		23.8		26.0		22.3		23.6		18.5		17.1			

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Project: WASHINGTON CLOSURE HANFORD																					
Lab: LLI	SDG: K0288																				
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6		J11VM7	
Remarks																		Duplicate		E. Blank	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	0.2	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.06	U
Aluminum		4600		5760		4840		4840		4520		5680		4500		5320		4530		37.9	
Arsenic	10	2.9		3.4		2.4		2.2		2.4		3.4		3.5		4.4		2.2		0.56	U
Boron		1.8	UJ	1.5	UJ	0.74	UJ	0.55	UJ	0.78	UJ	1.2	UJ	0.42	UJ	5.1		1.4	UJ	0.36	UJ
Barium	2	55.6		64.1		52.4		54.4		56.7		56.9		69.0		56.6		66.7		1.2	
Beryllium		0.35		0.41		0.48		0.48		0.45		0.51		0.43		0.42		0.39		0.05	
Calcium		7170		4100		4550		5700		4050		7320		6980		6270		4170		19.7	
Cadmium	0.2	0.41		0.28		0.12		0.17		0.12		0.17		0.21		0.37		0.18		0.06	U
Cobalt		7.0		7.4		7.7		7.6		6.9		7.7		8.9		7.5		10.0		0.13	U
Chromium	1	8.0		13.5		6.3		7.2		6.9		9.6		6.3		16.5		6.4		0.17	
Copper		16.2		22.5		14.5		14.6		13.0		18.8		16.6		66.1		14.1		0.11	U
Iron		16700		31800		19600		20600		15900		20300		22900		20100		17300		798	
Mercury	0.2	0.03		0.02	U	0.01	U	0.02	U	0.02	U	0.37		0.05		0.07		0.02		0.05	U
Potassium		994		1050		927		898		933		1070		858		968		828		15.4	
Lithium		7.6		6.5		4.5		5.1		4.5		7.1		5.3		5.8		4.4		0.06	UJ
Magnesium		3840		3890		3920		3850		3490		4760		4690		4240		3450		6.5	
Manganese		304		404		344		345		325		347		456		308		334		8.5	
Molybdenum		0.46		1.9		0.29	U	0.38		0.28	U	0.46		0.52		1.0		0.33		0.27	U
Sodium		178		109		101		118		85.4		143		146		196		109		6.0	
Nickel		9.7		22.0		9.9		8.9		10.0		11.7		11.3		11.8		8.6		0.22	U
Phosohorous		933	J	867	J	1010	J	1120	J	873	J	949	J	1120	J	924	J	911	J	4.3	J
Lead	5	25.9		55.5		5.0		8.8		7.2		22.3		12.3		152		10.6		0.29	U
Antimony		0.42	UJ	0.97	J	0.44	UJ	0.43	UJ	0.42	UJ	0.43	UJ	0.42	UJ	0.43	UJ	0.44	UJ	0.41	UJ
Selenium	1	0.45	U	0.48	U	0.47	U	0.46	U	0.45	U	0.46	U	0.45	U	0.46	U	0.47	U	0.44	U
Silicon		365	J	442	J	424	J	347	J	431	J	324	J	337	J	413	J	423	J	37.6	J
Tin		1.1	UJ	1.6	UJ	1.1	U	1.0	U	1.0	U	1.1	U	1.0	U	1.4	UJ	1.1	U	0.99	U
Strontium		23.0		23.4		18.0		20.6		18.8		25.5		20.3		23.1		20.9		0.19	
Titanium		1080		1110		1640		1720		1140		1490		1960		1580		1350		1.9	
Thallium		0.67	U	0.71	U	0.70	U	0.68	U	0.67	U	0.69	U	0.68	U	0.69	U	0.69	U	0.65	U
Uranium		0.85	U	0.90	U	0.88	U	0.85	U	0.84	U	0.86	U	0.85	U	0.87	U	0.87	U	0.81	U
Vanadium		33.5		38.5		48.0		50.3		36.9		47.2		58.4		49.9		40.1		0.08	U
Zinc	1	499		40.5		38.5		43.6		34.8		47.0		42.4		111		34.3		1.3	
Zirconium		17.6		17.8		25.0		23.8		20.5		20.6		22.5		19.8		21.0		1.1	

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Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11VK9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	6580	MG/KG	2.9	1.0
		Arsenic, Total	2.8	MG/KG	0.61	1.0
		Boron, Total	1.5 UJ	MG/KG	0.24	1.0
		Barium, Total	81.6	MG/KG	0.02	1.0
		Beryllium, Total	0.45	MG/KG	0.02	1.0
		Calcium, Total	4290	MG/KG	1.6	1.0
		Cadmium, Total	0.14	MG/KG	0.07	1.0
		Cobalt, Total	7.6	MG/KG	0.14	1.0
		Chromium, Total	11.0	MG/KG	0.13	1.0
		Copper, Total	14.7	MG/KG	0.12	1.0
		Iron, Total	19800	MG/KG	3.5	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1280	MG/KG	2.3	1.0
		Lithium, Total	7.0	MG/KG	0.03	1.0
		Magnesium, Total	4250	MG/KG	0.97	1.0
		Manganese, Total	370	MG/KG	0.03	1.0
		Molybdenum, Total	0.37	MG/KG	0.29	1.0
		Sodium, Total	122	MG/KG	0.76	1.0
		Nickel, Total	11.8	MG/KG	0.24	1.0
		Phosphorus, Total	872 J	MG/KG	0.90	1.0
		Lead, Total	6.0	MG/KG	0.31	1.0
		Antimony, Total	0.44 u J	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	475 J	MG/KG	2.3	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	22.5	MG/KG	0.01	1.0
		Titanium, Total	1290	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.88 u	MG/KG	0.88	1.0
		Vanadium, Total	45.6	MG/KG	0.09	1.0
		Zinc, Total	44.6	MG/KG	0.16	1.0
		Zirconium, Total	19.5	MG/KG	0.32	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J11VL0	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5570	MG/KG	2.9	1.0
		Arsenic, Total	2.6	MG/KG	0.61	1.0
		Boron, Total	1.4 UJ	MG/KG	0.24	1.0
		Barium, Total	55.4	MG/KG	0.02	1.0
		Beryllium, Total	0.38	MG/KG	0.02	1.0
		Calcium, Total	3540	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	6.7	MG/KG	0.14	1.0
		Chromium, Total	9.1	MG/KG	0.13	1.0
		Copper, Total	13.7	MG/KG	0.12	1.0
		Iron, Total	18800	MG/KG	3.5	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	992	MG/KG	2.3	1.0
		Lithium, Total	6.0	MG/KG	0.03	1.0
		Magnesium, Total	3970	MG/KG	0.96	1.0
		Manganese, Total	302	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.29	1.0
		Sodium, Total	110	MG/KG	0.76	1.0
		Nickel, Total	11.6	MG/KG	0.24	1.0
		Phosphorus, Total	831 J	MG/KG	0.89	1.0
		Lead, Total	4.8	MG/KG	0.31	1.0
		Antimony, Total	0.44 uJ	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	403 J	MG/KG	2.3	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	19.6	MG/KG	0.01	1.0
		Titanium, Total	1460	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.87 u	MG/KG	0.87	1.0
		Vanadium, Total	47.6	MG/KG	0.09	1.0
		Zinc, Total	37.6	MG/KG	0.16	1.0
		Zirconium, Total	18.4	MG/KG	0.32	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J11VL1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5080	MG/KG	3.0	1.0
		Arsenic, Total	2.3	MG/KG	0.63	1.0
		Boron, Total	1.9 UJ	MG/KG	0.25	1.0
		Barium, Total	55.7	MG/KG	0.02	1.0
		Beryllium, Total	0.48	MG/KG	0.02	1.0
		Calcium, Total	3670	MG/KG	1.7	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	7.2	MG/KG	0.15	1.0
		Chromium, Total	7.1	MG/KG	0.13	1.0
		Copper, Total	14.2	MG/KG	0.12	1.0
		Iron, Total	17100	MG/KG	3.6	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	908	MG/KG	2.4	1.0
		Lithium, Total	4.9	MG/KG	0.03	1.0
		Magnesium, Total	3710	MG/KG	1.0	1.0
		Manganese, Total	333	MG/KG	0.03	1.0
		Molybdenum, Total	0.34	MG/KG	0.30	1.0
		Sodium, Total	94.1	MG/KG	0.79	1.0
		Nickel, Total	9.1	MG/KG	0.25	1.0
		Phosphorus, Total	898 J	MG/KG	0.93	1.0
		Lead, Total	7.7	MG/KG	0.32	1.0
		Antimony, Total	0.46 u J	MG/KG	0.46	1.0
		Selenium, Total	0.49 u	MG/KG	0.49	1.0
		Silicon, Total	484 J	MG/KG	2.4	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	19.7	MG/KG	0.01	1.0
		Titanium, Total	1290	MG/KG	0.03	1.0
		Thallium, Total	0.73 u	MG/KG	0.73	1.0
		Uranium, Total	0.91 u	MG/KG	0.91	1.0
		Vanadium, Total	37.9	MG/KG	0.09	1.0
		Zinc, Total	37.4	MG/KG	0.17	1.0
		Zirconium, Total	23.8	MG/KG	0.33	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J11VL2	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5320	MG/KG	2.8	1.0
		Arsenic, Total	2.5	MG/KG	0.60	1.0
		Boron, Total	1.2 UJ	MG/KG	0.24	1.0
		Barium, Total	55.2	MG/KG	0.02	1.0
		Beryllium, Total	0.50	MG/KG	0.02	1.0
		Calcium, Total	4160	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	7.5	MG/KG	0.14	1.0
		Chromium, Total	7.8	MG/KG	0.13	1.0
		Copper, Total	14.4	MG/KG	0.12	1.0
		Iron, Total	19500	MG/KG	3.4	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	944	MG/KG	2.2	1.0
		Lithium, Total	5.0	MG/KG	0.03	1.0
		Magnesium, Total	4020	MG/KG	0.96	1.0
		Manganese, Total	338	MG/KG	0.03	1.0
		Molybdenum, Total	0.46	MG/KG	0.29	1.0
		Sodium, Total	137	MG/KG	0.75	1.0
		Nickel, Total	9.6	MG/KG	0.24	1.0
		Phosphorus, Total	841 J	MG/KG	0.89	1.0
		Lead, Total	10.8	MG/KG	0.31	1.0
		Antimony, Total	0.43 u J	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	383 J	MG/KG	2.2	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	20.7	MG/KG	0.01	1.0
		Titanium, Total	1560	MG/KG	0.03	1.0
		Thallium, Total	0.69 u	MG/KG	0.69	1.0
		Uranium, Total	0.87 u	MG/KG	0.87	1.0
		Vanadium, Total	48.9	MG/KG	0.09	1.0
		Zinc, Total	40.0	MG/KG	0.16	1.0
		Zirconium, Total	23.8	MG/KG	0.32	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J11VL3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5420	MG/KG	2.9	1.0
		Arsenic, Total	3.4	MG/KG	0.62	1.0
		Boron, Total	1.3 UJ	MG/KG	0.24	1.0
		Barium, Total	61.1	MG/KG	0.02	1.0
		Beryllium, Total	0.56	MG/KG	0.02	1.0
		Calcium, Total	4260	MG/KG	1.7	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	7.6	MG/KG	0.14	1.0
		Chromium, Total	7.9	MG/KG	0.13	1.0
		Copper, Total	13.6	MG/KG	0.12	1.0
		Iron, Total	19400	MG/KG	3.6	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1170	MG/KG	2.3	1.0
		Lithium, Total	5.1	MG/KG	0.03	1.0
		Magnesium, Total	3850	MG/KG	0.99	1.0
		Manganese, Total	370	MG/KG	0.03	1.0
		Molybdenum, Total	0.37	MG/KG	0.30	1.0
		Sodium, Total	98.7	MG/KG	0.77	1.0
		Nickel, Total	9.0	MG/KG	0.24	1.0
		Phosphorus, Total	887 J	MG/KG	0.92	1.0
		Lead, Total	6.8	MG/KG	0.32	1.0
		Antimony, Total	0.45 u J	MG/KG	0.45	1.0
		Selenium, Total	0.48 u	MG/KG	0.48	1.0
		Silicon, Total	447 J	MG/KG	2.3	1.0
		Tin, Total	1.1 UJ	MG/KG	1.1	1.0
		Strontium, Total	19.3	MG/KG	0.01	1.0
		Titanium, Total	1530	MG/KG	0.03	1.0
		Thallium, Total	0.71 u	MG/KG	0.71	1.0
		Uranium, Total	0.90 u	MG/KG	0.90	1.0
		Vanadium, Total	49.4	MG/KG	0.09	1.0
		Zinc, Total	43.9	MG/KG	0.16	1.0
		Zirconium, Total	26.0	MG/KG	0.33	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J11VL4	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4960	MG/KG	2.8	1.0
		Arsenic, Total	2.4	MG/KG	0.60	1.0
		Boron, Total	0.64 UJ	MG/KG	0.24	1.0
		Barium, Total	48.7	MG/KG	0.02	1.0
		Beryllium, Total	0.38	MG/KG	0.02	1.0
		Calcium, Total	4720	MG/KG	1.6	1.0
		Cadmium, Total	0.24	MG/KG	0.07	1.0
		Cobalt, Total	8.1	MG/KG	0.14	1.0
		Chromium, Total	6.5	MG/KG	0.13	1.0
		Copper, Total	15.5	MG/KG	0.12	1.0
		Iron, Total	20100	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	876	MG/KG	2.2	1.0
		Lithium, Total	5.1	MG/KG	0.03	1.0
		Magnesium, Total	3960	MG/KG	0.96	1.0
		Manganese, Total	332	MG/KG	0.03	1.0
		Molybdenum, Total	0.34	MG/KG	0.29	1.0
		Sodium, Total	116	MG/KG	0.75	1.0
		Nickel, Total	9.5	MG/KG	0.24	1.0
		Phosphorus, Total	1020 J	MG/KG	0.89	1.0
		Lead, Total	5.6	MG/KG	0.31	1.0
		Antimony, Total	0.43 u J	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	376 J	MG/KG	2.2	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	18.5	MG/KG	0.01	1.0
		Titanium, Total	1570	MG/KG	0.03	1.0
		Thallium, Total	0.69 u	MG/KG	0.69	1.0
		Uranium, Total	0.87 u	MG/KG	0.87	1.0
		Vanadium, Total	46.5	MG/KG	0.09	1.0
		Zinc, Total	38.7	MG/KG	0.16	1.0
		Zirconium, Total	22.3	MG/KG	0.32	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J11VL5	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	3590	MG/KG	2.8	1.0
		Arsenic, Total	1.6	MG/KG	0.59	1.0
		Boron, Total	0.34 UJ	MG/KG	0.23	1.0
		Barium, Total	36.4	MG/KG	0.02	1.0
		Beryllium, Total	0.33	MG/KG	0.02	1.0
		Calcium, Total	4520	MG/KG	1.6	1.0
		Cadmium, Total	0.22	MG/KG	0.07	1.0
		Cobalt, Total	7.0	MG/KG	0.14	1.0
		Chromium, Total	4.0	MG/KG	0.13	1.0
		Copper, Total	14.9	MG/KG	0.12	1.0
		Iron, Total	20400	MG/KG	3.4	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	581	MG/KG	2.2	1.0
		Lithium, Total	3.4	MG/KG	0.03	1.0
		Magnesium, Total	3460	MG/KG	0.94	1.0
		Manganese, Total	280	MG/KG	0.03	1.0
		Molybdenum, Total	0.29	MG/KG	0.28	1.0
		Sodium, Total	99.8	MG/KG	0.73	1.0
		Nickel, Total	7.4	MG/KG	0.23	1.0
		Phosphorus, Total	1240 J	MG/KG	1.7	2.0
		Lead, Total	7.4	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	301 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	19.0	MG/KG	0.01	1.0
		Titanium, Total	1920	MG/KG	0.03	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	51.4	MG/KG	0.09	1.0
		Zinc, Total	35.8	MG/KG	0.15	1.0
		Zirconium, Total	23.6	MG/KG	0.31	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J11VL6	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5390	MG/KG	2.8	1.0
		Arsenic, Total	2.9	MG/KG	0.59	1.0
		Boron, Total	1.4 UJ	MG/KG	0.23	1.0
		Barium, Total	59.9	MG/KG	0.02	1.0
		Beryllium, Total	0.37	MG/KG	0.02	1.0
		Calcium, Total	7640	MG/KG	1.6	1.0
		Cadmium, Total	0.26	MG/KG	0.07	1.0
		Cobalt, Total	6.8	MG/KG	0.13	1.0
		Chromium, Total	7.9	MG/KG	0.12	1.0
		Copper, Total	17.1	MG/KG	0.12	1.0
		Iron, Total	18900	MG/KG	3.4	1.0
		Mercury, Total	0.04	MG/KG	0.01	1.0
		Potassium, Total	1170	MG/KG	2.2	1.0
		Lithium, Total	8.5	MG/KG	0.03	1.0
		Magnesium, Total	4280	MG/KG	0.93	1.0
		Manganese, Total	324	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.28	1.0
		Sodium, Total	194	MG/KG	0.73	1.0
		Nickel, Total	10.4	MG/KG	0.23	1.0
		Phosphorus, Total	964 J	MG/KG	0.86	1.0
		Lead, Total	14.2	MG/KG	0.30	1.0
		Antimony, Total	0.42 uJ	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	428 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	24.8	MG/KG	0.01	1.0
		Titanium, Total	1360	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	42.6	MG/KG	0.09	1.0
		Zinc, Total	51.7	MG/KG	0.15	1.0
		Zirconium, Total	18.5	MG/KG	0.31	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J11VL7	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4800	MG/KG	2.9	1.0
		Arsenic, Total	2.7	MG/KG	0.61	1.0
		Boron, Total	1.1 UJ	MG/KG	0.24	1.0
		Barium, Total	45.9	MG/KG	0.02	1.0
		Beryllium, Total	0.37	MG/KG	0.02	1.0
		Calcium, Total	7010	MG/KG	1.6	1.0
		Cadmium, Total	0.22	MG/KG	0.07	1.0
		Cobalt, Total	6.8	MG/KG	0.14	1.0
		Chromium, Total	8.2	MG/KG	0.13	1.0
		Copper, Total	15.5	MG/KG	0.12	1.0
		Iron, Total	18200	MG/KG	3.5	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	901	MG/KG	2.3	1.0
		Lithium, Total	6.0	MG/KG	0.03	1.0
		Magnesium, Total	4370	MG/KG	0.97	1.0
		Manganese, Total	280	MG/KG	0.03	1.0
		Molybdenum, Total	0.43	MG/KG	0.29	1.0
		Sodium, Total	137	MG/KG	0.76	1.0
		Nickel, Total	11.8	MG/KG	0.24	1.0
		Phosphorus, Total	960 J	MG/KG	0.90	1.0
		Lead, Total	5.2	MG/KG	0.31	1.0
		Antimony, Total	0.44 u J	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	374 J	MG/KG	2.3	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	24.8	MG/KG	0.01	1.0
		Titanium, Total	1300	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.88 u	MG/KG	0.88	1.0
		Vanadium, Total	37.7	MG/KG	0.09	1.0
		Zinc, Total	39.1	MG/KG	0.16	1.0
		Zirconium, Total	17.1	MG/KG	0.32	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J11VL0	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4600	MG/KG	2.8	1.0
		Arsenic, Total	2.9	MG/KG	0.59	1.0
		Boron, Total	1.8 UJ	MG/KG	0.23	1.0
		Barium, Total	55.6	MG/KG	0.02	1.0
		Beryllium, Total	0.35	MG/KG	0.02	1.0
		Calcium, Total	7170	MG/KG	1.6	1.0
		Cadmium, Total	0.41	MG/KG	0.07	1.0
		Cobalt, Total	7.0	MG/KG	0.13	1.0
		Chromium, Total	8.0	MG/KG	0.12	1.0
		Copper, Total	16.2	MG/KG	0.12	1.0
		Iron, Total	16700	MG/KG	3.4	1.0
		Mercury, Total	0.03	MG/KG	0.01	1.0
		Potassium, Total	994	MG/KG	2.2	1.0
		Lithium, Total	7.6	MG/KG	0.03	1.0
		Magnesium, Total	3840	MG/KG	0.93	1.0
		Manganese, Total	304	MG/KG	0.03	1.0
		Molybdenum, Total	0.46	MG/KG	0.28	1.0
		Sodium, Total	178	MG/KG	0.73	1.0
		Nickel, Total	9.7	MG/KG	0.23	1.0
		Phosphorus, Total	933 J	MG/KG	0.86	1.0
		Lead, Total	25.9	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	365 J	MG/KG	2.2	1.0
		Tin, Total	1.1 UJ	MG/KG	1.0	1.0
		Strontium, Total	23.0	MG/KG	0.01	1.0
		Titanium, Total	1080	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	33.5	MG/KG	0.09	1.0
		Zinc, Total	499	MG/KG	0.15	1.0
		Zirconium, Total	17.6	MG/KG	0.31	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J11VL9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5760	MG/KG	2.9	1.0
		Arsenic, Total	3.4	MG/KG	0.62	1.0
		Boron, Total	1.5 UJ	MG/KG	0.24	1.0
		Barium, Total	64.1	MG/KG	0.02	1.0
		Beryllium, Total	0.41	MG/KG	0.02	1.0
		Calcium, Total	4100	MG/KG	1.7	1.0
		Cadmium, Total	0.28	MG/KG	0.07	1.0
		Cobalt, Total	7.4	MG/KG	0.14	1.0
		Chromium, Total	13.5	MG/KG	0.13	1.0
		Copper, Total	22.5	MG/KG	0.12	1.0
		Iron, Total	31800	MG/KG	3.6	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	1050	MG/KG	2.3	1.0
		Lithium, Total	6.5	MG/KG	0.03	1.0
		Magnesium, Total	3890	MG/KG	0.99	1.0
		Manganese, Total	404	MG/KG	0.03	1.0
		Molybdenum, Total	1.9	MG/KG	0.30	1.0
		Sodium, Total	109	MG/KG	0.77	1.0
		Nickel, Total	22.0	MG/KG	0.24	1.0
		Phosphorus, Total	867 J	MG/KG	0.92	1.0
		Lead, Total	55.5	MG/KG	0.32	1.0
		Antimony, Total	0.97 J	MG/KG	0.45	1.0
		Selenium, Total	0.48 u	MG/KG	0.48	1.0
		Silicon, Total	442 J	MG/KG	2.3	1.0
		Tin, Total	1.6 UJ	MG/KG	1.1	1.0
		Strontium, Total	23.4	MG/KG	0.01	1.0
		Titanium, Total	1110	MG/KG	0.03	1.0
		Thallium, Total	0.71 u	MG/KG	0.71	1.0
		Uranium, Total	0.90 u	MG/KG	0.90	1.0
		Vanadium, Total	38.5	MG/KG	0.09	1.0
		Zinc, Total	40.5	MG/KG	0.16	1.0
		Zirconium, Total	17.8	MG/KG	0.33	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	J11VM0	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4840	MG/KG	2.9	1.0
		Arsenic, Total	2.4	MG/KG	0.61	1.0
		Boron, Total	0.74 UJ	MG/KG	0.24	1.0
		Barium, Total	52.5	MG/KG	0.02	1.0
		Beryllium, Total	0.48	MG/KG	0.02	1.0
		Calcium, Total	4550	MG/KG	1.6	1.0
		Cadmium, Total	0.12	MG/KG	0.07	1.0
		Cobalt, Total	7.7	MG/KG	0.14	1.0
		Chromium, Total	6.3	MG/KG	0.13	1.0
		Copper, Total	14.5	MG/KG	0.12	1.0
		Iron, Total	19600	MG/KG	3.5	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	927	MG/KG	2.3	1.0
		Lithium, Total	4.5	MG/KG	0.03	1.0
		Magnesium, Total	3920	MG/KG	0.97	1.0
		Manganese, Total	344	MG/KG	0.03	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	101	MG/KG	0.76	1.0
		Nickel, Total	9.9	MG/KG	0.24	1.0
		Phosphorus, Total	1010 J	MG/KG	0.90	1.0
		Lead, Total	5.0	MG/KG	0.31	1.0
		Antimony, Total	0.44 u J	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	424 J	MG/KG	2.3	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	18.0	MG/KG	0.01	1.0
		Titanium, Total	1640	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.88 u	MG/KG	0.88	1.0
		Vanadium, Total	48.0	MG/KG	0.09	1.0
		Zinc, Total	38.5	MG/KG	0.16	1.0
		Zirconium, Total	25.0	MG/KG	0.32	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J11VM1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4840	MG/KG	2.8	1.0
		Arsenic, Total	2.2	MG/KG	0.59	1.0
		Boron, Total	0.55 UJ	MG/KG	0.23	1.0
		Barium, Total	54.4	MG/KG	0.02	1.0
		Beryllium, Total	0.48	MG/KG	0.02	1.0
		Calcium, Total	5700	MG/KG	1.6	1.0
		Cadmium, Total	0.17	MG/KG	0.07	1.0
		Cobalt, Total	7.6	MG/KG	0.14	1.0
		Chromium, Total	7.2	MG/KG	0.13	1.0
		Copper, Total	14.6	MG/KG	0.12	1.0
		Iron, Total	20600	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	898	MG/KG	2.2	1.0
		Lithium, Total	5.1	MG/KG	0.03	1.0
		Magnesium, Total	3850	MG/KG	0.94	1.0
		Manganese, Total	345	MG/KG	0.03	1.0
		Molybdenum, Total	0.38	MG/KG	0.28	1.0
		Sodium, Total	118	MG/KG	0.74	1.0
		Nickel, Total	8.9	MG/KG	0.23	1.0
		Phosphorus, Total	1120 J	MG/KG	0.87	1.0
		Lead, Total	8.8	MG/KG	0.30	1.0
		Antimony, Total	0.43 u J	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	347 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	20.6	MG/KG	0.01	1.0
		Titanium, Total	1720	MG/KG	0.03	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	50.3	MG/KG	0.09	1.0
		Zinc, Total	43.6	MG/KG	0.16	1.0
		Zirconium, Total	23.8	MG/KG	0.31	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-014	J11VM2	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4520	MG/KG	2.7	1.0
		Arsenic, Total	2.4	MG/KG	0.58	1.0
		Boron, Total	0.78 UJ	MG/KG	0.23	1.0
		Barium, Total	56.7	MG/KG	0.02	1.0
		Beryllium, Total	0.45	MG/KG	0.02	1.0
		Calcium, Total	4050	MG/KG	1.6	1.0
		Cadmium, Total	0.12	MG/KG	0.07	1.0
		Cobalt, Total	6.9	MG/KG	0.13	1.0
		Chromium, Total	6.9	MG/KG	0.12	1.0
		Copper, Total	13.0	MG/KG	0.11	1.0
		Iron, Total	15900	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	933	MG/KG	2.2	1.0
		Lithium, Total	4.5	MG/KG	0.03	1.0
		Magnesium, Total	3490	MG/KG	0.92	1.0
		Manganese, Total	325	MG/KG	0.03	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	85.4	MG/KG	0.72	1.0
		Nickel, Total	10.0	MG/KG	0.23	1.0
		Phosphorus, Total	873 J	MG/KG	0.86	1.0
		Lead, Total	7.2	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	431 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	18.8	MG/KG	0.01	1.0
		Titanium, Total	1140	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	36.9	MG/KG	0.09	1.0
		Zinc, Total	34.8	MG/KG	0.15	1.0
		Zirconium, Total	20.5	MG/KG	0.30	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-015	J11VM3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5680	MG/KG	2.8	1.0
		Arsenic, Total	3.4	MG/KG	0.60	1.0
		Boron, Total	1.2 UJ	MG/KG	0.24	1.0
		Barium, Total	56.9	MG/KG	0.02	1.0
		Beryllium, Total	0.51	MG/KG	0.02	1.0
		Calcium, Total	7320	MG/KG	1.6	1.0
		Cadmium, Total	0.17	MG/KG	0.07	1.0
		Cobalt, Total	7.7	MG/KG	0.14	1.0
		Chromium, Total	9.6	MG/KG	0.13	1.0
		Copper, Total	18.8	MG/KG	0.12	1.0
		Iron, Total	20300	MG/KG	3.4	1.0
		Mercury, Total	0.37	MG/KG	0.02	1.0
		Potassium, Total	1070	MG/KG	2.2	1.0
		Lithium, Total	7.1	MG/KG	0.03	1.0
		Magnesium, Total	4760	MG/KG	0.95	1.0
		Manganese, Total	347	MG/KG	0.03	1.0
		Molybdenum, Total	0.46	MG/KG	0.28	1.0
		Sodium, Total	143	MG/KG	0.75	1.0
		Nickel, Total	11.7	MG/KG	0.24	1.0
		Phosphorus, Total	949 J	MG/KG	0.88	1.0
		Lead, Total	22.3	MG/KG	0.30	1.0
		Antimony, Total	0.43 u J	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	324 J	MG/KG	2.2	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	25.5	MG/KG	0.01	1.0
		Titanium, Total	1490	MG/KG	0.03	1.0
		Thallium, Total	0.69 u	MG/KG	0.69	1.0
		Uranium, Total	0.86 u	MG/KG	0.86	1.0
		Vanadium, Total	47.2	MG/KG	0.09	1.0
		Zinc, Total	47.0	MG/KG	0.16	1.0
		Zirconium, Total	20.6	MG/KG	0.31	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-016	J11VM4	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4500	MG/KG	2.8	1.0
		Arsenic, Total	3.5	MG/KG	0.59	1.0
		Boron, Total	0.42 U J	MG/KG	0.23	1.0
		Barium, Total	69.0	MG/KG	0.02	1.0
		Beryllium, Total	0.43	MG/KG	0.02	1.0
		Calcium, Total	6980	MG/KG	1.6	1.0
		Cadmium, Total	0.21	MG/KG	0.07	1.0
		Cobalt, Total	8.9	MG/KG	0.14	1.0
		Chromium, Total	6.3	MG/KG	0.13	1.0
		Copper, Total	16.6	MG/KG	0.12	1.0
		Iron, Total	22900	MG/KG	3.4	1.0
		Mercury, Total	0.05	MG/KG	0.02	1.0
		Potassium, Total	858	MG/KG	2.2	1.0
		Lithium, Total	5.3	MG/KG	0.03	1.0
		Magnesium, Total	4690	MG/KG	0.94	1.0
		Manganese, Total	456	MG/KG	0.03	1.0
		Molybdenum, Total	0.52	MG/KG	0.28	1.0
		Sodium, Total	146	MG/KG	0.73	1.0
		Nickel, Total	11.3	MG/KG	0.23	1.0
		Phosphorus, Total	1120 J	MG/KG	1.7	2.0
		Lead, Total	12.3	MG/KG	0.30	1.0
		Antimony, Total	0.42 u J	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	337 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	20.3	MG/KG	0.01	1.0
		Titanium, Total	1960	MG/KG	0.03	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	58.4	MG/KG	0.09	1.0
		Zinc, Total	42.4	MG/KG	0.15	1.0
		Zirconium, Total	22.5	MG/KG	0.31	1.0

9/14/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-017	J11VM5	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	5320	MG/KG	2.8	1.0
		Arsenic, Total	4.4	MG/KG	0.60	1.0
		Boron, Total	5.1	MG/KG	0.24	1.0
		Barium, Total	56.6	MG/KG	0.02	1.0
		Beryllium, Total	0.42	MG/KG	0.02	1.0
		Calcium, Total	6270	MG/KG	1.6	1.0
		Cadmium, Total	0.37	MG/KG	0.07	1.0
		Cobalt, Total	7.5	MG/KG	0.14	1.0
		Chromium, Total	16.5	MG/KG	0.13	1.0
		Copper, Total	66.1	MG/KG	0.12	1.0
		Iron, Total	20100	MG/KG	3.4	1.0
		Mercury, Total	0.07	MG/KG	0.02	1.0
		Potassium, Total	968	MG/KG	2.2	1.0
		Lithium, Total	5.8	MG/KG	0.03	1.0
		Magnesium, Total	4240	MG/KG	0.95	1.0
		Manganese, Total	308	MG/KG	0.03	1.0
		Molybdenum, Total	1.0	MG/KG	0.29	1.0
		Sodium, Total	196	MG/KG	0.75	1.0
		Nickel, Total	11.8	MG/KG	0.24	1.0
		Phosphorus, Total	924 J	MG/KG	0.88	1.0
		Lead, Total	152	MG/KG	0.30	1.0
		Antimony, Total	0.43 u J	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	413 J	MG/KG	2.2	1.0
		Tin, Total	1.4 UJ	MG/KG	1.1	1.0
		Strontium, Total	23.1	MG/KG	0.01	1.0
		Titanium, Total	1580	MG/KG	0.03	1.0
		Thallium, Total	0.69 u	MG/KG	0.69	1.0
		Uranium, Total	0.87 u	MG/KG	0.87	1.0
		Vanadium, Total	49.9	MG/KG	0.09	1.0
		Zinc, Total	111	MG/KG	0.16	1.0
		Zirconium, Total	19.8	MG/KG	0.31	1.0

9/4/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-018	J11VM6	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	4530	MG/KG	2.9	1.0
		Arsenic, Total	2.2	MG/KG	0.60	1.0
		Boron, Total	1.4 UJ	MG/KG	0.24	1.0
		Barium, Total	66.7	MG/KG	0.02	1.0
		Beryllium, Total	0.39	MG/KG	0.02	1.0
		Calcium, Total	4170	MG/KG	1.6	1.0
		Cadmium, Total	0.18	MG/KG	0.07	1.0
		Cobalt, Total	10.0	MG/KG	0.14	1.0
		Chromium, Total	6.4	MG/KG	0.13	1.0
		Copper, Total	14.1	MG/KG	0.12	1.0
		Iron, Total	17300	MG/KG	3.5	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Potassium, Total	828	MG/KG	2.2	1.0
		Lithium, Total	4.4	MG/KG	0.03	1.0
		Magnesium, Total	3450	MG/KG	0.96	1.0
		Manganese, Total	334	MG/KG	0.03	1.0
		Molybdenum, Total	0.33	MG/KG	0.29	1.0
		Sodium, Total	109	MG/KG	0.75	1.0
		Nickel, Total	8.6	MG/KG	0.24	1.0
		Phosphorus, Total	911 J	MG/KG	0.89	1.0
		Lead, Total	10.6	MG/KG	0.31	1.0
		Antimony, Total	0.44 uJ	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	423 J	MG/KG	2.2	1.0
		Tin, Total	1.1 u	MG/KG	1.1	1.0
		Strontium, Total	20.9	MG/KG	0.01	1.0
		Titanium, Total	1350	MG/KG	0.03	1.0
		Thallium, Total	0.69 u	MG/KG	0.69	1.0
		Uranium, Total	0.87 u	MG/KG	0.87	1.0
		Vanadium, Total	40.1	MG/KG	0.09	1.0
		Zinc, Total	34.3	MG/KG	0.16	1.0
		Zirconium, Total	21.0	MG/KG	0.32	1.0

9/4/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-019	J11VM7	Silver, Total	0.06 u	MG/KG	0.06	1.0
		Aluminum, Total	37.9	MG/KG	2.7	1.0
		Arsenic, Total	0.56 u	MG/KG	0.56	1.0
		Boron, Total	0.36 UJ	MG/KG	0.22	1.0
		Barium, Total	1.2	MG/KG	0.02	1.0
		Beryllium, Total	0.05	MG/KG	0.02	1.0
		Calcium, Total	19.7	MG/KG	1.5	1.0
		Cadmium, Total	0.06 u	MG/KG	0.06	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.17	MG/KG	0.12	1.0
		Copper, Total	0.11 u	MG/KG	0.11	1.0
		Iron, Total	798	MG/KG	3.2	1.0
		Mercury, Total	0.05 u	MG/KG	0.05	1.0
		Potassium, Total	15.4	MG/KG	2.1	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	6.5	MG/KG	0.90	1.0
		Manganese, Total	8.5	MG/KG	0.03	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	6.0	MG/KG	0.70	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Phosphorus, Total	4.3 J	MG/KG	0.83	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u J	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	27.6 J	MG/KG	2.1	1.0
		Tin, Total	0.99 u	MG/KG	0.99	1.0
		Strontium, Total	0.19	MG/KG	0.009	1.0
		Titanium, Total	1.9	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.81 u	MG/KG	0.81	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	1.3	MG/KG	0.15	1.0
		Zirconium, Total	1.1	MG/KG	0.30	1.0

9/4/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-025
LVL#: 0604L713
SDG/SAF#: K0288/RC-025

W.O.#: 11343-606-001-9999-00
Date Received: 04-07-06

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 19 soil samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. Samples J11VL5 and J11VM4 were rerun with 2-fold dilutions for Phosphorous due to sample matrix.

3. All analyses were performed within the required holding times.

4. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

5. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

7. All ICP Interference Check Standards were within control limits.

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 43.9%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

9. The matrix spike (MS) recoveries for 7 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 56 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J11VK9	Aluminum	20,000	94.5
	Iron	40,000	105.2
	Manganese	2,000	103.3
	Phosphorous	4,000	89.1
	Antimony	100	98.8
	Silicon	2,000	100.4
	Titanium	2,100	104.1

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

14. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

5/12/06
Date

jjw/m04-713

LVLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025
Ice Chest No. AFS-04-052	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. See OSPC

Price Code: Air Quality

Data Turnaround: 21 days

000000052

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

000035

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C			
Type of Container				G/P	G/P	aG	aG	G/P	aG			
No. of Container(s)				1	1	1	1	1	1			
Volume				250g	250g	250mL	250mL	500mL	250mL			
				See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Chlorinated Herbicides - EPA8151~~			
Sample No.	Matrix *	Sample Date	Sample Time									
J11VK9	SOIL	04/05/06	1030	✓	✓	✓	✓		✓			
J11VL0	SOIL	04/05/06	1035	✓	✓	✓	✓		✓			
J11VL1	SOIL	04/05/06	1050	✓	✓	✓	✓		✓			
J11VL2	SOIL	04/05/06	1054	✓	✓	✓	✓		✓			
J11VL3	SOIL	04/05/06	1225	✓	✓	✓	✓		✓			

04/05/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.R. Edmundson	4-6-06 0930
T.R. Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	D. Smith	4-7-06 0920

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2. Run gross alpha and gross beta on available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~

04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code	Data Turnaround
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025	Air Quality	21 days
Ice Chest No. #FS-04-052	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES HONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions. 04/05/06	Pesticides - 8081, ~~Chloro-Herbicides - EPA 615~~ 04/05/06					
Sample No.	Matrix *	Sample Date	Sample Time								
J11VL4	SOIL	04/05/06	1235	✓	✓	✓	✓		✓		
J11VL5	SOIL	04/05/06	1240	✓	✓	✓	✓		✓		
J11VL6	SOIL	04/05/06	1245	✓	✓	✓	✓		✓		
J11VL7	SOIL	04/05/06	1250	✓	✓	✓	✓		✓		
J11VL8	SOIL	04/05/06	1300	✓	✓	✓	✓		✓		

C0003

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	1630 4-5-06	3728 Ref 2A	1630 4-5-06
3728 #2A	4-6-06 0930	T.G. Alexander / TR Edmundson	4-6-06 0930
TR Edmundson / WCH / TR Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 1020	D Smith	4-7-06 1020

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2. Run gross alpha and gross beta off available material~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to Relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025
Ice Chest No. AFS-04-051	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC

Price Code: Air Quality

Data Turnaround: 21 days

00000054

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

000037

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	500mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081; ~~Chloro Herbicides - 8151~~ 04/05/06					
Sample No.	Matrix *	Sample Date	Sample Time								
J11VL9	SOIL	04/05/06	1330	✓	✓	✓	✓		✓		
J11VM0	SOIL	04/05/06	1340	✓	✓	✓	✓		✓		
J11VM1	SOIL	04/05/06	1415	✓	✓	✓	✓		✓		
J11VM2	SOIL	04/05/06	1420	✓	✓	✓	✓		✓		
J11VM3	SOIL	04/05/06	1450	✓	✓	✓	✓		✓		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3722 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.E. Edmundson / JC Edmundson	4-6-06 0930
T.E. Edmundson / JC Edmundson	4-6-06 1500	FED EX	
[illegible]	4-7-06 0920	D. J. Miller	4-7-06 0920

SPECIAL INSTRUCTIONS

~~(3) addition to item # 2 Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}, Mercury - 7471 - (CV)

(2) ~~Gamma spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code Air Quality	Data Turnaround 21 days
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025		
Ice Chest No. ERC-99-062	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES/LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	500mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions. 04/05/06	Pesticides - 8081; ~~Chloro-Herbicides - EPA8151~~ 04/05/06					
Sample No.	Matrix *	Sample Date	Sample Time								
J11VM4	SOIL	04/05/06	1455	✓	✓	✓	✓		✓		
J11VM5	SOIL	04/05/06	1500	✓	✓	✓	✓		✓		
J11VM6	SOIL	04/05/06	1058	✓	✓	✓	✓		✓		
J11VM7	SOIL	04/05/06	1052	✓	N/A	N/A	✓		N/A		

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 #2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.K. Edmondson	4-6-06 0930
T.K. Edmondson	4-6-06 1500	FED EX	
FED EX	4-7-06 10920	[illegible]	4-7-06 10920

SPECIAL INSTRUCTIONS 04/05/06

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S-Soil
SE-Sediment
SO-Solid
SL-Sludge
W-Water
O-Oil
A-Air
DS-Drum Solids
DL-Drum Liquids
FT-Tissue
WI-Wipe
L-Liquid
V-Vegetation
X-Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-C-9:2			DATA PACKAGE: K0288		
VALIDATOR: TCI		LAB: LLI		DATE: 9/2/06	
			SDG: K0288		

ANALYSES PERFORMED

SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX

J11VK9	J11VL0	J11VL1	J11VL2	J11VL3	J11VL4
J11VL5	J11VL6	J11VL7	J11VL8	J11VL9	J11VM0
J11VM1	J11VM2	J11VM3	J11VM4	J11VM5	J11VM6
J11VM7					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes (No) N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No (N/A)

Initial calibrations acceptable? ..... Yes No (N/A)

ICP interference checks acceptable? ..... Yes No (N/A)

ICV and CCV checks performed on all instruments? ..... Yes No (N/A)

ICV and CCV checks acceptable? ..... Yes No (N/A)

Standards traceable? ..... Yes No (N/A)

Standards expired? ..... Yes No (N/A)

Calculation check acceptable? ..... Yes No (N/A)

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: boron - all but MS - UJ

Lithium - M7 - UJ tin - L3, L8, L9 + MS 2/4

FB - al, barium, beryllium, calcium, chromium, Fe, K, magnesium, manganese, Na, phosphorous, Silicon Strontium, titanium, zinc + zirconium

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: phosphorous - 59% - J all (MS) no PAS

Antimony - 56% - J all "

Silicon - 44% - J all LCS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0248-MB1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	2.9 u	MG/KG	2.9	1.0
		Arsenic, Total	0.61 u	MG/KG	0.61	1.0
		Boron, Total	0.41	MG/KG	0.24	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Calcium, Total	1.6 u	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.13 u	MG/KG	0.13	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.5 u	MG/KG	3.5	1.0
		Potassium, Total	2.3 u	MG/KG	2.3	1.0
		Lithium, Total	0.07	MG/KG	0.03	1.0
		Magnesium, Total	0.97 u	MG/KG	0.97	1.0
		Manganese, Total	0.03 u	MG/KG	0.03	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	0.76 u	MG/KG	0.76	1.0
		Nickel, Total	0.24 u	MG/KG	0.24	1.0
		Phosphorus, Total	0.90 u	MG/KG	0.90	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.44 u	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	2.3 u	MG/KG	2.3	1.0
		Tin, Total	1.2	MG/KG	1.1	1.0
		Strontium, Total	0.01 u	MG/KG	0.01	1.0
		Titanium, Total	0.03 u	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.88 u	MG/KG	0.88	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.16 u	MG/KG	0.16	1.0
		Zirconium, Total	0.32 u	MG/KG	0.32	1.0
BLANK1	06C0075-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J11VK9	Silver, Total	4.4	0.07u	5.0	88.0	1.0
		Aluminum, Total	7490	6580	200	455.4*	1.0
		Arsenic, Total	187	2.8	200	92.0	1.0
		Boron, Total	91.0	1.5	99.9	89.6	1.0
		Barium, Total	255	81.6	200	86.9	1.0
		Beryllium, Total	5.3	0.45	5.0	97.1	1.0
		Calcium, Total	6390	4290	2500	84.3	1.0
		Cadmium, Total	4.7	0.14	5.0	91.1	1.0
		Cobalt, Total	53.1	7.6	49.9	91.2	1.0
		Chromium, Total	29.0	11.0	20.0	90.0	1.0
		Copper, Total	38.7	14.7	25.0	96.0	1.0
		Iron, Total	18000	19800	99.9	-1800. *	1.0
		Mercury, Total	0.16	0.01u	0.14	109.8	1.0
		Potassium, Total	3600	1280	2500	92.9	1.0
		Lithium, Total	112	7.0	99.9	104.8	1.0
		Magnesium, Total	6330	4250	2500	83.5	1.0
		Manganese, Total	385	370	49.9	30.5*	1.0
		Molybdenum, Total	93.6	0.37	99.9	93.3	1.0
		Sodium, Total	2440	122	2500	92.9	1.0
		Nickel, Total	58.3	11.8	49.9	93.2	1.0
		Phosphorus, Total	1170	872	500	59.4	1.0
		Lead, Total	52.9	6.0	49.9	94.0	1.0
		Antimony, Total	27.9	0.44u	49.9	55.9	1.0
		Selenium, Total	174	0.47u	200	87.2	1.0
		Silicon, Total	778	475	99.9	303.2*	1.0
		Tin, Total	92.9	1.1 u	99.9	93.0	1.0
		Strontium, Total	114	22.5	99.9	91.4	1.0
		Titanium, Total	1150	1290	99.9	-140. *	1.0
		Thallium, Total	188	0.70u	200	93.9	1.0
		Uranium, Total	234	0.88u	250	93.7	1.0
		Vanadium, Total	85.6	45.6	49.9	80.2	1.0
		Zinc, Total	85.7	44.6	49.9	82.4	1.0
		Zirconium, Total	473	19.5	500	90.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
001REP	J11VK9	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	6580	6620	0.64	1.0
		Arsenic, Total	2.8	3.3	16.4	1.0
		Boron, Total	1.5	1.3	14.3	1.0
		Barium, Total	81.6	77.4	5.3	1.0
		Beryllium, Total	0.45	0.48	6.3	1.0
		Calcium, Total	4290	4630	7.7	1.0
		Cadmium, Total	0.14	0.08	60.0	1.0
		Cobalt, Total	7.6	7.5	1.3	1.0
		Chromium, Total	11.0	11.2	1.8	1.0
		Copper, Total	14.7	14.4	2.1	1.0
		Iron, Total	19800	18900	4.6	1.0
		Mercury, Total	0.01u	0.01u	NC	1.0
		Potassium, Total	1280	1290	1.4	1.0
		Lithium, Total	7.0	7.0	0.00	1.0
		Magnesium, Total	4250	4120	2.9	1.0
		Manganese, Total	370	381	3.1	1.0
		Molybdenum, Total	0.37	0.43	14.4	1.0
		Sodium, Total	122	124	0.97	1.0
		Nickel, Total	11.8	11.9	0.84	1.0
		Phosphorus, Total	872	797	9.0	1.0
		Lead, Total	6.0	6.1	1.7	1.0
		Antimony, Total	0.44u	0.44u	NC	1.0
		Selenium, Total	0.47u	0.47u	NC	1.0
		Silicon, Total	475	430	9.8	1.0
		Tin, Total	1.1 u	1.1 u	NC	1.0
		Strontium, Total	22.5	24.7	9.3	1.0
		Titanium, Total	1290	1250	3.2	1.0
		Thallium, Total	0.70u	0.70u	NC	1.0
		Uranium, Total	0.88u	0.88u	NC	1.0
		Vanadium, Total	45.6	45.1	1.1	1.0
		Zinc, Total	44.6	42.3	5.3	1.0
		Zirconium, Total	19.5	19.6	0.51	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 05/11/06

CLIENT: TNUHANFORD RC-025 K0288 LVL LOT #: 0604L713

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0248-LC1	Silver, LCS	47.7	50.0	MG/KG	95.4
		Aluminum, LCS	474	500	MG/KG	94.8
		Arsenic, LCS	912	1000	MG/KG	91.2
		Boron, LCS	463	500	MG/KG	92.6
		Barium, LCS	480	500	MG/KG	95.9
		Beryllium, LCS	24.2	25.0	MG/KG	96.8
		Calcium, LCS	2490	2500	MG/KG	99.5
		Cadmium, LCS	23.9	25.0	MG/KG	95.6
		Cobalt, LCS	239	250	MG/KG	95.4
		Chromium, LCS	48.7	50.0	MG/KG	97.4
		Copper, LCS	121	125	MG/KG	97.0
		Iron, LCS	483	500	MG/KG	96.7
		Potassium, LCS	2330	2500	MG/KG	93.1
		Lithium, LCS	495	500	MG/KG	99.0
		Magnesium, LCS	2410	2500	MG/KG	96.4
		Manganese, LCS	75.9	75.0	MG/KG	101.2
		Molybdenum, LCS	489	500	MG/KG	97.8
		Sodium, LCS	2300	2500	MG/KG	92.1
		Nickel, LCS	192	200	MG/KG	96.0
		Phosphorus, LCS	476	500	MG/KG	95.3
		Lead, LCS	240	250	MG/KG	95.8
		Antimony, LCS	285	300	MG/KG	95.0
		Selenium, LCS	871	1000	MG/KG	87.1
		Silicon, LCS	220	500	MG/KG	43.9
		Tin, LCS	483	500	MG/KG	96.6
		Strontium, LCS	483	500	MG/KG	96.5
		Titanium, LCS	486	500	MG/KG	97.2
		Thallium, LCS	951	1000	MG/KG	95.1
		Uranium, LCS	245	250	MG/KG	97.9
		Vanadium, LCS	246	250	MG/KG	98.4
		Zinc, LCS	95.1	100	MG/KG	95.1
		Zirconium, LCS	496	500	MG/KG	99.1
LCS1	06C0075-LC1	Mercury, LCS	6.2	6.2	MG/KG	99.3

Date: 5 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100BC Remaining Pipelines & Sewers – Soil Full Protocol - Waste Site 100-C-9:2
Subject: Semivolatile - Data Package No. K0288-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0288 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11VK9	4/5/06	Soil	C	See note 1
J11VL0	4/5/06	Soil	C	See note 1
J11VL1	4/5/06	Soil	C	See note 1
J11VL2	4/5/06	Soil	C	See note 1
J11VL3	4/5/06	Soil	C	See note 1
J11VL4	4/5/06	Soil	C	See note 1
J11VL5	4/5/06	Soil	C	See note 1
J11VL6	4/5/06	Soil	C	See note 1
J11VL7	4/5/06	Soil	C	See note 1
J11VL8	4/5/06	Soil	C	See note 1
J11VL9	4/5/06	Soil	C	See note 1
J11VM0	4/5/06	Soil	C	See note 1
J11VM1	4/5/06	Soil	C	See note 1
J11VM2	4/5/06	Soil	C	See note 1
J11VM3	4/5/06	Soil	C	See note 1
J11VM4	4/5/06	Soil	C	See note 1
J11VM5	4/5/06	Soil	C	See note 1
J11VM6	4/5/06	Soil	C	See note 1
J11VM7	4/5/06	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation

DATA QUALITY OBJECTIVES

· Holding Times

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded, but not by greater than two times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were met.

· Method Blanks

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

All other method blank results were acceptable.

Field Blanks

One equipment blank (J11VM7) was submitted for analysis. Di-n-butylphthalate was detected in the equipment blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike recoveries outside QC limits, all 2-methylphenol (57%), 4-methylphenol (58%) and 1,2,4-trichlorobenzene results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (17%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to RPDs outside QC limits, all phenol (33%), 4-methylphenol (40%), n-nitroso-di-n-propylamine (31%), 2,4,6-trichlorophenol (34%), pentachlorophenol (54%) and di-n-octylphthalate (39%) results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J11VL2/J11M6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. One-hundred fifty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0288 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

Due to method blank contamination, all bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

Due to matrix spike recoveries outside QC limits, all 2-methylphenol (57%), 4-methylphenol (58%) and 1,2,4-trichlorobenzene results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (17%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Due to RPDs outside QC limits, all phenol (33%), 4-methylphenol (40%), n-nitroso-di-n-propylamine (31%), 2,4,6-trichlorophenol (34%), pentachlorophenol (54%) and di-n-octylphthalate (39%) results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods

One-hundred fifty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the same quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K0288	REVIEWER: TLI	Project: 100-C-9:2	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	All	Blank contamination
2-Methylphenol 4-Methylphenol 1,2,4-Trichlorobenzene	J	All	MS recovery
2,4-Dinitrophenol	J	All	LCS recovery
Phenol 4-Methylphenol n-Nitroso-di-n-propylamine 2,4,6-Trichlorophenol Pentachlorophenol Di-n-octylphthalate	J	All	RPD

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: K0288																				
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7			
Remarks								orig													
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06			
Extraction Date		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06			
Analysis Date		4/18/06		4/20/06		4/18/06		4/20/06		4/20/06		4/19/06		4/19/06		4/24/06		4/20/06			
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
bis(2-Chloroethyl)ether	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2-Chlorophenol	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
1,3-Dichlorobenzene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
1,4-Dichlorobenzene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
1,2-Dichlorobenzene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2-Methylphenol	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
2,2'-oxybis(1-chloropropane)	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
4-Methylphenol	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
N-Nitroso-di-n-propylamine	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
Hexachloroethane	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Nitrobenzene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Isophorone	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2-Nitrophenol	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2,4-Dimethylphenol	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
bis(2-Chloroethoxy)methane	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2,4-Dichlorophenol	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
1,2,4-Trichlorobenzene	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
Naphthalene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
4-Chloroaniline	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Hexachlorobutadiene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
4-Chloro-3-methylphenol	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2-Methylnaphthalene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Hexachlorocyclopentadiene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2,4,6-Trichlorophenol	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
2,4,5-Trichlorophenol*	660	880	U	890	U	920	U	890	U	920	U	890	U	870	U	860	U	900	U		
2-Chloronaphthalene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2-Nitroaniline*	660	880	U	890	U	920	U	890	U	920	U	890	U	870	U	860	U	900	U		
Dimethylphthalate	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Acenaphthylene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2,6-Dinitrotoluene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		

000011

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: K0288																				
Sample Number		J11VK9		J11VL0		J11VL1		J11VL2		J11VL3		J11VL4		J11VL5		J11VL6		J11VL7			
Remarks								orig													
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06			
Extraction Date		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06			
Analysis Date		4/18/06		4/20/06		4/18/06		4/20/06		4/20/06		4/19/06		4/19/06		4/24/06		4/20/06			
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	880	U	890	U	920	U	890	U	920	U	890	U	870	U	860	U	900	U		
Acenaphthene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2,4-Dinitrophenol*	660	880	UJ	890	UJ	920	UJ	890	UJ	920	UJ	890	UJ	870	UJ	860	UJ	900	UJ		
4-Nitrophenol*	660	880	U	890	U	920	U	890	U	920	U	890	U	870	U	860	U	900	U		
Dibenzofuran	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
2,4-Dinitrotoluene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Diethylphthalate	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
4-Chlorophenyl-phenyl ether	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Fluorene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
4-Nitroaniline*	660	880	U	890	U	920	U	890	U	920	U	890	U	870	U	860	U	900	U		
4,6-Dinitro-2-methylphenol*	660	880	U	890	U	920	U	890	U	920	U	890	U	870	U	860	U	900	U		
N-Nitrosodiphenylamine	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
4-Bromophenyl-phenyl ether	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Hexachlorobenzene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Pentachlorophenol*	660	880	UJ	890	UJ	920	UJ	890	UJ	920	UJ	890	UJ	870	UJ	860	UJ	900	UJ		
Phenanthrene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	49		360	U		
Anthracene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Carbazole	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Di-n-butylphthalate	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Fluoranthene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	74		24			
Pyrene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	73		43			
Butylbenzylphthalate	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
3,3'-Dichlorobenzidine	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Benzo(a)anthracene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	37		21			
Chrysene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	46		33			
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U		
Di-n-octylphthalate	660	350	UJ	350	UJ	370	UJ	360	UJ	370	UJ	350	UJ	350	UJ	350	UJ	360	UJ		
Benzo(b)fluoranthene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	32		26			
Benzo(k)fluoranthene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	32		24			
Benzo(a)pyrene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	38		27			
Indeno(1,2,3-cd)pyrene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	20		20			
Dibenz(a,h)anthracene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	350	U	360	U		
Benzo(g,h,i)perylene	660	350	U	350	U	370	U	360	U	370	U	350	U	350	U	23		33			

000012

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: K0288																				
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6		J11VM7	
Remarks																		Duplicate		E. Blank	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Extraction Date		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06	
Analysis Date		4/26/04		4/24/04		4/20/06		4/25/06		4/24/04		4/20/06		4/20/06		4/24/04		4/20/06		4/20/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
bis(2-Chloroethyl)ether	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2-Chlorophenol	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
1,3-Dichlorobenzene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
1,4-Dichlorobenzene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
1,2-Dichlorobenzene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2-Methylphenol	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
2,2'-oxybis(1-chloropropane)	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
4-Methylphenol	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
N-Nitroso-di-n-propylamine	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
Hexachloroethane	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Nitrobenzene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Isophorone	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2-Nitrophenol	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2,4-Dimethylphenol	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
bis(2-Chloroethoxy)methane	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2,4-Dichlorophenol	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
1,2,4-Trichlorobenzene	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
Naphthalene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
4-Chloroaniline	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Hexachlorobutadiene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
4-Chloro-3-methylphenol	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2-Methylnaphthalene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Hexachlorocyclopentadiene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2,4,6-Trichlorophenol	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
2,4,5-Trichlorophenol*	660	870	U	3700	U	890	U	870	U	870	U	880	U	870	U	3500	U	880	U	830	U
2-Chloronaphthalene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2-Nitroaniline*	660	870	U	3700	U	890	U	870	U	870	U	880	U	870	U	3500	U	880	U	830	U
Dimethylphthalate	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Acenaphthylene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2,6-Dinitrotoluene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000013

SEMIVOLATILE ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																					
Laboratory: LLI	SDG: K0288																				
Sample Number		J11VL8		J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4		J11VM5		J11VM6		J11VM7	
Remarks																		Duplicate		E. Blank	
Sample Date		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06		4/5/06	
Extraction Date		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06		4/13/06	
Analysis Date		4/26/04		4/24/04		4/20/06		4/25/06		4/24/04		4/20/06		4/20/06		4/24/04		4/20/06		4/20/06	
Semivolatile (8270C)	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	870	U	3700	U	890	U	870	U	870	U	880	U	870	U	3500	U	880	U	830	U
Acenaphthene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2,4-Dinitrophenol*	660	870	UJ	3700	UJ	890	UJ	870	UJ	870	UJ	880	UJ	870	UJ	3500	UJ	880	UJ	830	UJ
4-Nitrophenol*	660	870	U	3700	U	890	U	870	U	870	U	880	U	870	U	3500	U	880	U	830	U
Dibenzofuran	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
2,4-Dinitrotoluene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Diethylphthalate	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
4-Chlorophenyl-phenyl ether	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Fluorene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
4-Nitroaniline*	660	870	U	3700	U	890	U	870	U	870	U	880	U	870	U	3500	U	880	U	830	U
4,6-Dinitro-2-methylphenol*	660	870	U	3700	U	890	U	870	U	870	U	880	U	870	U	3500	U	880	U	830	U
N-Nitrosodiphenylamine	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
4-Bromophenyl-phenyl ether	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Hexachlorobenzene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Pentachlorophenol*	660	870	UJ	3700	UJ	890	UJ	870	UJ	870	UJ	880	UJ	870	UJ	3500	UJ	880	UJ	830	UJ
Phenanthrene	660	56		1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Anthracene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Carbazole	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Di-n-butylphthalate	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	51	
Fluoranthene	660	81		1500	U	360	U	24		24		350	U	350	U	1400	U	350	U	330	U
Pyrene	660	94		1500	U	360	U	23		24		350	U	350	U	1400	U	350	U	330	U
Butylbenzylphthalate	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
3,3'-Dichlorobenzidine	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Benzo(a)anthracene	660	41		1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Chrysene	660	55		1500	U	360	U	19		20		19		21		82		350	U	330	U
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	350	UJ	1500	UJ	360	UJ	350	UJ	350	UJ	350	UJ	350	UJ	1400	UJ	350	UJ	330	UJ
Benzo(b)fluoranthene	660	41		1500	U	360	U	350	U	350	U	350	U	24		73		350	U	330	U
Benzo(k)fluoranthene	660	45		1500	U	360	U	350	U	350	U	19		23		1400	U	350	U	330	U
Benzo(a)pyrene	660	48		1500	U	360	U	18		350	U	350	U	22		1400	U	350	U	330	U
Indeno(1,2,3-cd)pyrene	660	30		1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Dibenz(a,h)anthracene	660	350	U	1500	U	360	U	350	U	350	U	350	U	350	U	1400	U	350	U	330	U
Benzo(g,h,i)perylene	660	37		1500	U	360	U	18		350	U	350	U	23		1400	U	350	U	330	U

Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results.

All other qualifiers shown were applied during validation.

* - RQL exceeded

000014

Richville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 04/27/06 14:59

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 1a

	Cust ID:	J11VK9	J11VK9	J11VK9	J11VL0	J11VL1	J11VL2
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	54 %	55 %	57 %	50 %	56 %	54 %
	2-Fluorobiphenyl	58 %	62 %	65 %	50 %	64 %	55 %
	Terphenyl-d14	69 %	67 %	80 %	66 %	76 %	81 %
	Phenol-d5	58 %	58 %	68 %	57 %	60 %	56 %
	2-Fluorophenol	58 %	63 %	62 %	49 %	58 %	55 %
	2,4,6-Tribromophenol	63 %	64 %	92 %	46 %	67 %	77 %
		fl	fl	fl	fl	fl	fl
Phenol		350 U J	61 %	85 %	350 U J	370 U J	360 U J
bis(2-Chloroethyl)ether		350 U	57 %	71 %	350 U	370 U	360 U
2-Chlorophenol		350 U	62 %	79 %	350 U	370 U	360 U
1,3-Dichlorobenzene		350 U	55 %	64 %	350 U	370 U	360 U
1,4-Dichlorobenzene		350 U	54 %	63 %	350 U	370 U	360 U
1,2-Dichlorobenzene		350 U	57 %	69 %	350 U	370 U	360 U
2-Methylphenol		350 U J	57 * %	77 %	350 U J	370 U J	360 U J
2,2'-oxybis(1-Chloropropane)		350 U	57 %	72 %	350 U	370 U	360 U
4-Methylphenol		350 U J	58 * %	87 %	350 U J	370 U J	360 U J
N-Nitroso-di-n-propylamine		350 U J	59 %	81 %	350 U J	370 U J	360 U J
Hexachloroethane		350 U	53 %	59 %	350 U	370 U	360 U
Nitrobenzene		350 U	58 %	66 %	350 U	370 U	360 U
Isophorone		350 U	69 %	79 %	350 U	370 U	360 U
2-Nitrophenol		350 U	56 %	72 %	350 U	370 U	360 U
2,4-Dimethylphenol		350 U	50 %	61 %	350 U	370 U	360 U
bis(2-Chloroethoxy)methane		350 U	64 %	73 %	350 U	370 U	360 U
2,4-Dichlorophenol		350 U	64 %	77 %	350 U	370 U	360 U
1,2,4-Trichlorobenzene		350 U J	58 * %	66 %	350 U J	370 U J	360 U J
Naphthalene		350 U	58 %	68 %	350 U	370 U	360 U
4-Chloroaniline		350 U	77 %	85 %	350 U	370 U	360 U
Hexachlorobutadiene		350 U	63 %	71 %	350 U	370 U	360 U
4-Chloro-3-methylphenol		350 U	68 %	82 %	350 U	370 U	360 U
2-Methylnaphthalene		350 U	65 %	75 %	350 U	370 U	360 U
Hexachlorocyclopentadiene		350 U	50 %	49 %	350 U	370 U	360 U
2,4,6-Trichlorophenol		350 U J	64 %	90 %	350 U J	370 U J	360 U J
2,4,5-Trichlorophenol		880 U	68 %	87 %	890 U	920 U	890 U

*= Outside of EPA CLP QC limits.

9/4/06

000015

000000008

Cust ID:	J11VK9	J11VK9	J11VK9	J11VL0	J11VL1	J11VL2
RFW#:	001	001 MS	001 MSD	002	003	004
2-Chloronaphthalene	350 U	64 %	78 %	350 U	370 U	360 U
2-Nitroaniline	880 U	71 %	81 %	890 U	920 U	890 U
Dimethylphthalate	350 U	73 %	81 %	350 U	370 U	360 U
Acenaphthylene	350 U	67 %	80 %	350 U	370 U	360 U
2,6-Dinitrotoluene	350 U	72 %	80 %	350 U	370 U	360 U
3-Nitroaniline	880 U	87 %	106 %	890 U	920 U	890 U
Acenaphthene	350 U	67 %	79 %	350 U	370 U	360 U
2,4-Dinitrophenol	880 U J	22 %	23 %	890 U J	920 U J	890 U J
4-Nitrophenol	880 U	68 %	86 %	890 U	920 U	890 U
Dibenzofuran	350 U	70 %	82 %	350 U	370 U	360 U
2,4-Dinitrotoluene	350 U	76 %	83 %	350 U	370 U	360 U
Diethylphthalate	350 U	75 %	81 %	350 U	370 U	360 U
4-Chlorophenyl-phenylether	350 U	72 %	81 %	350 U	370 U	360 U
Fluorene	350 U	68 %	77 %	350 U	370 U	360 U
4-Nitroaniline	880 U	75 %	81 %	890 U	920 U	890 U
4,6-Dinitro-2-methylphenol	880 U	59 %	67 %	890 U	920 U	890 U
N-Nitrosodiphenylamine (1)	350 U	57 %	70 %	350 U	370 U	360 U
4-Bromophenyl-phenylether	350 U	62 %	73 %	350 U	370 U	360 U
Hexachlorobenzene	350 U	71 %	89 %	350 U	370 U	360 U
Pentachlorophenol	880 U J	60 %	104 %	890 U J	920 U J	890 U J
Phenanthrene	350 U	69 %	82 %	350 U	370 U	360 U
Anthracene	350 U	71 %	84 %	350 U	370 U	360 U
Carbazole	350 U	71 %	79 %	350 U	370 U	360 U
Di-n-butylphthalate	350 U	72 %	83 %	350 U	370 U	360 U
Fluoranthene	350 U	74 %	78 %	350 U	370 U	360 U
Pyrene	350 U	68 %	92 %	350 U	370 U	360 U
Butylbenzylphthalate	350 U	75 %	96 %	350 U	370 U	360 U
3,3'-Dichlorobenzidine	350 U	97 %	108 %	350 U	370 U	360 U
Benzo(a)anthracene	350 U	71 %	80 %	350 U	370 U	360 U
Chrysene	350 U	71 %	77 %	350 U	370 U	360 U
bis(2-Ethylhexyl)phthalate	660 ~~520~~ B U	58 %	74 %	660 ~~87~~ B U	660 ~~560~~ B U	660 ~~400~~ B U
Di-n-octyl phthalate	350 U J	72 %	107 %	350 U J	370 U J	360 U J
Benzo(b)fluoranthene	350 U	69 %	88 %	350 U	370 U	360 U
Benzo(k)fluoranthene	350 U	67 %	81 %	350 U	370 U	360 U
Benzo(a)pyrene	350 U	68 %	79 %	350 U	370 U	360 U
Indeno(1,2,3-cd)pyrene	350 U	76 %	69 %	350 U	370 U	360 U
Dibenz(a,h)anthracene	350 U	76 %	70 %	350 U	370 U	360 U
Benzo(g,h,i)perylene	350 U	74 %	64 %	350 U	370 U	360 U

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9/4/06

000016

000000009

	Cust ID:	J11VL3		J11VL4		J11VL5		J11VL6		J11VL7		J11VL8	
Sample Information	RFW#:	005		006		007		008		009		010	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	53	%	60	%	61	%	56	%	57	%	69	%
	2-Fluorobiphenyl	52	%	63	%	65	%	60	%	63	%	76	%
	Terphenyl-d14	80	%	90	%	77	%	68	%	97	%	92	%
	Phenol-d5	55	%	65	%	62	%	60	%	70	%	67	%
	2-Fluorophenol	55	%	60	%	62	%	56	%	56	%	66	%
	2,4,6-Tribromophenol	73	%	58	%	52	%	59	%	76	%	72	%
			fl		fl		fl		fl		fl		fl
Phenol		370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
bis(2-Chloroethyl)ether		370	U	350	U	350	U	350	U	360	U	350	U
2-Chlorophenol		370	U	350	U	350	U	350	U	360	U	350	U
1,3-Dichlorobenzene		370	U	350	U	350	U	350	U	360	U	350	U
1,4-Dichlorobenzene		370	U	350	U	350	U	350	U	360	U	350	U
1,2-Dichlorobenzene		370	U	350	U	350	U	350	U	360	U	350	U
2-Methylphenol		370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
2,2'-oxybis(1-Chloropropane)		370	U	350	U	350	U	350	U	360	U	350	U
4-Methylphenol		370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
N-Nitroso-di-n-propylamine		370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
Hexachloroethane		370	U	350	U	350	U	350	U	360	U	350	U
Nitrobenzene		370	U	350	U	350	U	350	U	360	U	350	U
Isophorone		370	U	350	U	350	U	350	U	360	U	350	U
2-Nitrophenol		370	U	350	U	350	U	350	U	360	U	350	U
2,4-Dimethylphenol		370	U	350	U	350	U	350	U	360	U	350	U
bis(2-Chloroethoxy)methane		370	U	350	U	350	U	350	U	360	U	350	U
2,4-Dichlorophenol		370	U	350	U	350	U	350	U	360	U	350	U
1,2,4-Trichlorobenzene		370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
Naphthalene		370	U	350	U	350	U	350	U	360	U	350	U
4-Chloroaniline		370	U	350	U	350	U	350	U	360	U	350	U
Hexachlorobutadiene		370	U	350	U	350	U	350	U	360	U	350	U
4-Chloro-3-methylphenol		370	U	350	U	350	U	350	U	360	U	350	U
2-Methylnaphthalene		370	U	350	U	350	U	350	U	360	U	350	U
Hexachlorocyclopentadiene		370	U	350	U	350	U	350	U	360	U	350	U
2,4,6-Trichlorophenol		370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
2,4,5-Trichlorophenol		920	U	890	U	870	U	860	U	900	U	870	U

*= Outside of EPA CLP QC limits.

R 9/4/06

000017

000000010

RFW Batch Number: 0604L713 Client: TNUHANFORD KC-025 K0288 Work Order: [illegible] Page: [illegible]

Cust ID:	J11VL3		J11VL4		J11VL5		J11VL6		J11VL7		J11VL8	
RFW#:	005		006		007		008		009		010	
2-Chloronaphthalene	370	U	350	U	350	U	350	U	360	U	350	U
2-Nitroaniline	920	U	890	U	870	U	860	U	900	U	870	U
Dimethylphthalate	370	U	350	U	350	U	350	U	360	U	350	U
Acenaphthylene	370	U	350	U	350	U	350	U	360	U	350	U
2,6-Dinitrotoluene	370	U	350	U	350	U	350	U	360	U	350	U
3-Nitroaniline	920	U	890	U	870	U	860	U	900	U	870	U
Acenaphthene	370	U	350	U	350	U	350	U	360	U	350	U
2,4-Dinitrophenol	920	U J	890	U J	870	U J	860	U J	900	U J	870	U J
4-Nitrophenol	920	U	890	U	870	U	860	U	900	U	870	U
Dibenzofuran	370	U	350	U	350	U	350	U	360	U	350	U
2,4-Dinitrotoluene	370	U	350	U	350	U	350	U	360	U	350	U
Diethylphthalate	370	U	350	U	350	U	350	U	360	U	350	U
4-Chlorophenyl-phenylether	370	U	350	U	350	U	350	U	360	U	350	U
Fluorene	370	U	350	U	350	U	350	U	360	U	350	U
4-Nitroaniline	920	U	890	U	870	U	860	U	900	U	870	U
4,6-Dinitro-2-methylphenol	920	U	890	U	870	U	860	U	900	U	870	U
N-Nitrosodiphenylamine (1)	370	U	350	U	350	U	350	U	360	U	350	U
4-Bromophenyl-phenylether	370	U	350	U	350	U	350	U	360	U	350	U
Hexachlorobenzene	370	U	350	U	350	U	350	U	360	U	350	U
Pentachlorophenol	920	U J	890	U J	870	U J	860	U J	900	U J	870	U J
Phenanthrene	370	U	350	U	350	U	49	J	360	U	56	J
Anthracene	370	U	350	U	350	U	350	U	360	U	350	U
Carbazole	370	U	350	U	350	U	350	U	360	U	350	U
Di-n-butylphthalate	370	U	350	U	350	U	350	U	360	U	350	U
Fluoranthene	370	U	350	U	350	U	74	J	24	J	81	J
Pyrene	370	U	350	U	350	U	73	J	43	J	94	J
Butylbenzylphthalate	370	U	350	U	350	U	350	U	360	U	350	U
3,3'-Dichlorobenzidine	370	U	350	U	350	U	350	U	360	U	350	U
Benzo(a)anthracene	370	U	350	U	350	U	37	J	21	J	41	J
Chrysene	370	U	350	U	350	U	46	J	33		55	J
bis(2-Ethylhexyl)phthalate	660 ~~110~~ 4/11/06 ~~B~~	U	660 ~~52~~ 4/11/06 ~~JB~~	U	660 ~~86~~ 4/11/06 ~~JB~~	U	660 ~~28~~ 4/11/06 ~~JB~~	U	660 ~~240~~ 4/11/06 ~~JB~~	U	660 ~~430~~ 4/11/06 ~~B~~	U
Di-n-octyl phthalate	370	U J	350	U J	350	U J	350	U J	360	U J	350	U J
Benzo(b)fluoranthene	370	U	350	U	350	U	32	J	26	J	41	J
Benzo(k)fluoranthene	370	U	350	U	350	U	32	J	24	J	45	J
Benzo(a)pyrene	370	U	350	U	350	U	38	J	27	J	48	J
Indeno(1,2,3-cd)pyrene	370	U	350	U	350	U	20	J	20	J	30	J
Dibenz(a,h)anthracene	370	U	350	U	350	U	350	U	360	U	350	U
Benzo(g,h,i)perylene	370	U	350	U	350	U	23	J	33	J	37	J

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9/4/06

000018

000000011

Semivolatiles by GC/MS, HSL List

Report Date: 04/27/06 14:59

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 3a

	Cust ID:	J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4	
Sample Information	RFW#:	011		012		013		014		015		016	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	4.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	53	%	54	%	58	%	57	%	47	%	52	%
	2-Fluorobiphenyl	65	%	60	%	65	%	63	%	55	%	67	%
	Terphenyl-d14	83	%	78	%	84	%	80	%	66	%	82	%
	Phenol-d5	55	%	63	%	64	%	57	%	48	%	52	%
	2-Fluorophenol	54	%	54	%	56	%	55	%	45	%	48	%
	2,4,6-Tribromophenol	49	%	66	%	68	%	60	%	56	%	61	%
		fl		fl		fl		fl		fl		fl	
Phenol		1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
bis(2-Chloroethyl)ether		1500	U	360	U	350	U	350	U	350	U	350	U
2-Chlorophenol		1500	U	360	U	350	U	350	U	350	U	350	U
1,3-Dichlorobenzene		1500	U	360	U	350	U	350	U	350	U	350	U
1,4-Dichlorobenzene		1500	U	360	U	350	U	350	U	350	U	350	U
1,2-Dichlorobenzene		1500	U	360	U	350	U	350	U	350	U	350	U
2-Methylphenol		1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
2,2'-oxybis(1-Chloropropane)		1500	U	360	U	350	U	350	U	350	U	350	U
4-Methylphenol		1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
N-Nitroso-di-n-propylamine		1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
Hexachloroethane		1500	U	360	U	350	U	350	U	350	U	350	U
Nitrobenzene		1500	U	360	U	350	U	350	U	350	U	350	U
Isophorone		1500	U	360	U	350	U	350	U	350	U	350	U
2-Nitrophenol		1500	U	360	U	350	U	350	U	350	U	350	U
2,4-Dimethylphenol		1500	U	360	U	350	U	350	U	350	U	350	U
bis(2-Chloroethoxy)methane		1500	U	360	U	350	U	350	U	350	U	350	U
2,4-Dichlorophenol		1500	U	360	U	350	U	350	U	350	U	350	U
1,2,4-Trichlorobenzene		1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
Naphthalene		1500	U	360	U	350	U	350	U	350	U	350	U
4-Chloroaniline		1500	U	360	U	350	U	350	U	350	U	350	U
Hexachlorobutadiene		1500	U	360	U	350	U	350	U	350	U	350	U
4-Chloro-3-methylphenol		1500	U	360	U	350	U	350	U	350	U	350	U
2-Methylnaphthalene		1500	U	360	U	350	U	350	U	350	U	350	U
Hexachlorocyclopentadiene		1500	U	360	U	350	U	350	U	350	U	350	U
2,4,6-Trichlorophenol		1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
2,4,5-Trichlorophenol		3700	U	890	U	870	U	870	U	880	U	870	U

*= Outside of EPA CLP QC limits.

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000000012

RFW Batch Number: 0604L713 Client: [illegible]

Cust ID:	J11VL9		J11VM0		J11VM1		J11VM2		J11VM3		J11VM4	
RFW#:	011		012		013		014		015		016	
2-Chloronaphthalene	1500	U	360	U	350	U	350	U	350	U	350	U
2-Nitroaniline	3700	U	890	U	870	U	870	U	880	U	870	U
Dimethylphthalate	1500	U	360	U	350	U	350	U	350	U	350	U
Acenaphthylene	1500	U	360	U	350	U	350	U	350	U	350	U
2,6-Dinitrotoluene	1500	U	360	U	350	U	350	U	350	U	350	U
3-Nitroaniline	3700	U	890	U	870	U	870	U	880	U	870	U
Acenaphthene	1500	U	360	U	350	U	350	U	350	U	350	U
2,4-Dinitrophenol	3700	U J	890	U J	870	U J	870	U J	880	U J	870	U J
4-Nitrophenol	3700	U	890	U	870	U	870	U	880	U	870	U
Dibenzofuran	1500	U	360	U	350	U	350	U	350	U	350	U
2,4-Dinitrotoluene	1500	U	360	U	350	U	350	U	350	U	350	U
Diethylphthalate	1500	U	360	U	350	U	350	U	350	U	350	U
4-Chlorophenyl-phenylether	1500	U	360	U	350	U	350	U	350	U	350	U
Fluorene	1500	U	360	U	350	U	350	U	350	U	350	U
4-Nitroaniline	3700	U	890	U	870	U	870	U	880	U	870	U
4,6-Dinitro-2-methylphenol	3700	U	890	U	870	U	870	U	880	U	870	U
N-Nitrosodiphenylamine (1)	1500	U	360	U	350	U	350	U	350	U	350	U
4-Bromophenyl-phenylether	1500	U	360	U	350	U	350	U	350	U	350	U
Hexachlorobenzene	1500	U	360	U	350	U	350	U	350	U	350	U
Pentachlorophenol	3700	U J	890	U J	870	U J	870	U J	880	U J	870	U J
Phenanthrene	1500	U	360	U	350	U	350	U	350	U	350	U
Anthracene	1500	U	360	U	350	U	350	U	350	U	350	U
Carbazole	1500	U	360	U	350	U	350	U	350	U	350	U
Di-n-butylphthalate	1500	U	360	U	350	U	350	U	350	U	350	U
Fluoranthene	1500	U	360	U	24	J	24	J	350	U	350	U
Pyrene	1500	U	360	U	23		24	J	350	U	350	U
Butylbenzylphthalate	1500	U	360	U	350	U	350	U	350	U	350	U
3,3'-Dichlorobenzidine	1500	U	360	U	350	U	350	U	350	U	350	U
Benzo(a)anthracene	1500	U	360	U	350	U	350	U	350	U	350	U
Chrysene	1500	U	360	U	19	J	20	J	19	J	21	J
bis(2-Ethylhexyl)phthalate	660 ~~1100~~ 9/14 ~~JB~~ U		660 ~~170~~ 9/14 ~~JB~~ U		660 ~~280~~ 9/14 ~~JB~~ U		660 ~~560~~ 9/14 ~~B~~ U		660 ~~460~~ 9/14 ~~B~~ U		660 ~~120~~ 9/14 ~~JB~~ U	
Di-n-octyl phthalate	1500	U J	360	U J	350	U J	350	U J	350	U J	350	U J
Benzo(b)fluoranthene	1500	U	360	U	350	U	350	U	350	U	24	J
Benzo(k)fluoranthene	1500	U	360	U	350	U	350	U	19	J	23	J
Benzo(a)pyrene	1500	U	360	U	18	J	350	U	350	U	22	J
Indeno(1,2,3-cd)pyrene	1500	U	360	U	350	U	350	U	350	U	350	U
Dibenz(a,h)anthracene	1500	U	360	U	350	U	350	U	350	U	350	U
Benzo(g,h,i)perylene	1500	U	360	U	18	J	350	U	350	U	23	J

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

R 9/4/06

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Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 04/27/06 14:59

RFW Batch Number: 0604L713 Client: TNUHANFORD RC-025 K0288 Work Order: 11343606001 Page: 4a

	Cust ID:	J11VM5	J11VM6	J11VM7	SBLKWD	SBLKWD BS
Sample Information	RFW#:	017	018	019	06LE0284-MB1	06LE0284-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	61 %	57 %	31 %	53 %	65 %
	2-Fluorobiphenyl	73 %	58 %	36 %	59 %	67 %
	Terphenyl-d14	70 %	71 %	62 %	72 %	70 %
	Phenol-d5	59 %	63 %	34 %	55 %	64 %
	2-Fluorophenol	56 %	58 %	30 %	55 %	67 %
	2,4,6-Tribromophenol	47 %	54 %	34 %	48 %	67 %
		fl	fl	fl	fl	fl
Phenol		1400 U J	350 U J	330 U J	330 U	71 %
bis(2-Chloroethyl)ether		1400 U	350 U	330 U	330 U	72 %
2-Chlorophenol		1400 U	350 U	330 U	330 U	72 %
1,3-Dichlorobenzene		1400 U	350 U	330 U	330 U	66 %
1,4-Dichlorobenzene		1400 U	350 U	330 U	330 U	65 %
1,2-Dichlorobenzene		1400 U	350 U	330 U	330 U	68 %
2-Methylphenol		1400 U J	350 U J	330 U J	330 U	68 %
2,2'-oxybis(1-Chloropropane)		1400 U	350 U	330 U	330 U	71 %
4-Methylphenol		1400 U J	350 U J	330 U J	330 U	69 %
N-Nitroso-di-n-propylamine		1400 U J	350 U J	330 U J	330 U	68 %
Hexachloroethane		1400 U	350 U	330 U	330 U	65 %
Nitrobenzene		1400 U	350 U	330 U	330 U	70 %
Isophorone		1400 U	350 U	330 U	330 U	78 %
2-Nitrophenol		1400 U	350 U	330 U	330 U	72 %
2,4-Dimethylphenol		1400 U	350 U	330 U	330 U	63 %
bis(2-Chloroethoxy)methane		1400 U	350 U	330 U	330 U	77 %
2,4-Dichlorophenol		1400 U	350 U	330 U	330 U	75 %
1,2,4-Trichlorobenzene		1400 U J	350 U J	330 U J	330 U	73 %
Naphthalene		1400 U	350 U	330 U	330 U	70 %
4-Chloroaniline		1400 U	350 U	330 U	330 U	88 %
Hexachlorobutadiene		1400 U	350 U	330 U	330 U	80 %
4-Chloro-3-methylphenol		1400 U	350 U	330 U	330 U	73 %
2-Methylnaphthalene		1400 U	350 U	330 U	330 U	76 %
Hexachlorocyclopentadiene		1400 U	350 U	330 U	330 U	65 %
2,4,6-Trichlorophenol		1400 U J	350 U J	330 U J	330 U	71 %
2,4,5-Trichlorophenol		3500 U	880 U	830 U	830 U	75 %

*= Outside of EPA CLP QC limits.

9/4/06

000000014

000021

RFW Batch Number: 06042713

Cust ID:	J11VM5		J11VM6		J11VM7		SBLKWD		SBLKWD BS	
RFW#:	017		018		019		06LE0284-MB1		06LE0284-MB1	
2-Chloronaphthalene	1400	U	350	U	330	U	330	U	71	%
2-Nitroaniline	3500	U	880	U	830	U	830	U	74	%
Dimethylphthalate	1400	U	350	U	330	U	330	U	77	%
Acenaphthylene	1400	U	350	U	330	U	330	U	72	%
2,6-Dinitrotoluene	1400	U	350	U	330	U	330	U	76	%
3-Nitroaniline	3500	U	880	U	830	U	830	U	88	%
Acenaphthene	1400	U	350	U	330	U	330	U	71	%
2,4-Dinitrophenol	3500	U J	880	U J	830	U J	830	U	17 *	%
4-Nitrophenol	3500	U	880	U	830	U	830	U	69	%
Dibenzofuran	1400	U	350	U	330	U	330	U	74	%
2,4-Dinitrotoluene	1400	U	350	U	330	U	330	U	80	%
Diethylphthalate	1400	U	350	U	330	U	330	U	79	%
4-Chlorophenyl-phenylether	1400	U	350	U	330	U	330	U	75	%
Fluorene	1400	U	350	U	330	U	330	U	72	%
4-Nitroaniline	3500	U	880	U	830	U	830	U	74	%
4,6-Dinitro-2-methylphenol	3500	U	880	U	830	U	830	U	65	%
N-Nitrosodiphenylamine (1)	1400	U	350	U	330	U	330	U	62	%
4-Bromophenyl-phenylether	1400	U	350	U	330	U	330	U	69	%
Hexachlorobenzene	1400	U	350	U	330	U	330	U	79	%
Pentachlorophenol	3500	U J	880	U J	830	U J	830	U	74	%
Phenanthrene	1400	U	350	U	330	U	330	U	75	%
Anthracene	1400	U	350	U	330	U	330	U	77	%
Carbazole	1400	U	350	U	330	U	330	U	73	%
Di-n-butylphthalate	1400	U	350	U	51	J	330	U	79	%
Fluoranthene	1400	U	350	U	330	U	330	U	78	%
Pyrene	1400	U	350	U	330	U	330	U	75	%
Butylbenzylphthalate	1400	U	350	U	330	U	330	U	84	%
3,3'-Dichlorobenzidine	1400	U	350	U	330	U	330	U	101	%
Benzo(a)anthracene	1400	U	350	U	330	U	330	U	76	%
Chrysene	82	J	350	U	330	U	330	U	76	%
bis(2-Ethylhexyl)phthalate	660 ~~130~~ JB U		660 ~~21~~ JB U		660 ~~260~~ JB U		420		99	%
Di-n-octyl phthalate	1400	U J	350	U J	330	U J	330	U	82	%
Benzo(b)fluoranthene	73	J	350	U	330	U	330	U	77	%
Benzo(k)fluoranthene	1400	U	350	U	330	U	330	U	74	%
Benzo(a)pyrene	1400	U	350	U	330	U	330	U	74	%
Indeno(1,2,3-cd)pyrene	1400	U	350	U	330	U	330	U	83	%
Dibenz(a,h)anthracene	1400	U	350	U	330	U	330	U	82	%
Benzo(g,h,i)perylene	1400	U	350	U	330	U	330	U	81	%

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

9/4/06

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-025
LVL #: 0604L713
SDG/SAF # K0288/RC-025

W.O. #: 11343-606-001-9999-00
Date Received: 04-07-2006

SEMIVOLATILE

Nineteen (19) soil samples were collected on 04-05-2006.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 04-13-2006 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 04-18,19,20,24,25,26-2006.

The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted and analyzed within required holding time.

2. Non-target compounds were detected in the samples.

3. All surrogate recoveries were within acceptance criteria.

4. Three (3) of one hundred twenty-eight (128) matrix spike recoveries were outside acceptance criteria.

   One (1) of sixty-four (64) blank spike recoveries was outside acceptance criteria.

   A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than 2x the CRQL.

6. Internal standard area and retention time criteria were met.

7. Samples J11VL9 and J11VM5 were analyzed using 4mL final volume due to the nature of the sample extract resulting in higher sample results. A copy of the Sample Extraction Record has been enclosed for more information.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 4 4 pages.

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

LIONVILLE LABORATORY INC.

8. The sample results were reported on a dry-weight basis.

9. Manual integrations are performed according to SOP QA-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").

10. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

11. I certify, that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data, contained in this hard-copy data package, has been authorized, by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

som\gorup\data\bna\tnu-hanford\0604-713.doc

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06MS140

Initiator: Shawn Saylor
Date: 4-27-06
Client: JMY

Batch: 0604L713
Samples: MS, BS
Method: SW846/MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: 061E0284

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

① low recovery of 2,4-dinitrophenol in the blank spike

② low recovery of several analytes in the matrix spike but matrix spike dup is ok

2. Known or Probable Causes(s)

(1+2) loss due to highly acidic chromatographic behavior of these compounds

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description: narrate

4. Project Manager Instructions...signature/date: 4/28/06

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 5/5/06

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
✓ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
5	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	7	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code Air Quality	Data Turnaround 21 days
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025		
Ice Chest No. AF5-04-052	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS
none

Special Handling and/or Storage
cool 4 degrees centigrade

Preservation			None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C			
Type of Container			G/P	G/P	aG	aG	G/P	aG			
No. of Container(s)			1	1	1	1	1	1			
Volume			250g	250g	250mL	250mL	500mL	250mL			
SAMPLE ANALYSIS			See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081, ~~Chlorinated Herbicides - 8151~~			
Sample No.	Matrix *	Sample Date	Sample Time								
J11VK9	SOIL	04/05/06	1030	✓	✓	✓	✓		✓		
J11VL0	SOIL	04/05/06	1035	✓	✓	✓	✓		✓		
J11VL1	SOIL	04/05/06	1050	✓	✓	✓	✓		✓		
J11VL2	SOIL	04/05/06	1054	✓	✓	✓	✓		✓		
J11VL3	SOIL	04/05/06	1225	✓	✓	✓	✓		✓		

04/05/06

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Ref 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.R. Edmundson / J.R. Edmundson	4-6-06 0930
J.R. Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	[illegible]	4-7-06 0920

SPECIAL INSTRUCTIONS

(2) ~~addition to item # 2. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}, Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~

04/05/06

Personnel not available to relinquish samples from 3728 Ref #2A on 4/6/06

Matrix *
S=Soil
SC=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000027

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code	Data Turnaround
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025	Air Quality	21 days
Ice Chest No. #FS-04-052	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES RICHLAND	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C					
Type of Container	G/P	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1	1					
Volume	250g	250g	250mL	250mL	250mL	250mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions.	Pesticides - 8081, ~~Chlorinated Herbicides - 8151~~					

Sample No.	Matrix *	Sample Date	Sample Time									
J11VL4	SOIL	04/05/06	1235	✓	✓	✓	✓		✓			
J11VL5	SOIL	04/05/06	1240	✓	✓	✓	✓		✓			
J11VL6	SOIL	04/05/06	1245	✓	✓	✓	✓		✓			
J11VL7	SOIL	04/05/06	1250	✓	✓	✓	✓		✓			
J11VL8	SOIL	04/05/06	1300	✓	✓	✓	✓		✓			

04/05/06

04/05/06

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From Kevin Singleton	Date/Time 1630 4-5-06	Received By/Stored In 3728 Ref 2A	Date/Time 1630 4-5-06
Relinquished By/Removed From 3728 #2A	Date/Time 4-6-06 0930	Received By/Stored In T.G. Edmundson JR Edmundson	Date/Time 4-6-06 0930
Relinquished By/Removed From TR Edmundson WCH JR Edmundson	Date/Time 4-6-06 1500	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 4-7-06 1020	Received By/Stored In D Smith	Date/Time 4-7-06 1020
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}, Mercury - 7471 - (CV)

~~(2) Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to Relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

0000004
0000028

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 2 of 4

Collector: C. Martinez/K Singleton/D. Bowers	Company Contact: C. Martinez	Telephone No.: 509-539-2816	Project Coordinator: KESSNER, JH
Price Code: Air Quality	Data Turnaround: 21 days		
Project Designation: 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location: 100-C-9:2 (1607-B8 & B9)		SAF No.: RC-025
Ice Chest No.: AFS-04-051	Field Logbook No.: EL-1585-5	COA: R100C92000	Method of Shipment: fed ex
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060351		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C				
Type of Container	G/P	G/P	aG	aG	G/P	aG				
No. of Container(s)	1	1	1	1	1	1				
Volume	250g	250g	250mL	250mL	500mL	250mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions	Pesticides - 8081, ~~Chloro-Herbicides - 8151~~ 04/05/06				

020000

Sample No.	Matrix *	Sample Date	Sample Time									
J11VL9	SOIL	04/05/06	1330	✓	✓	✓	✓		✓			
J11VM0	SOIL	04/05/06	1340	✓	✓	✓	✓		✓			
J11VM1	SOIL	04/05/06	1415	✓	✓	✓	✓		✓			
J11VM2	SOIL	04/05/06	1420	✓	✓	✓	✓		✓			
J11VM3	SOIL	04/05/06	1450	✓	✓	✓	✓		✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	4-5-06 1630	3728 Rf 2A	4-5-06 1630
3728 #2A	4-6-06 0930	T.E. Edmundson / JC Edmundson	4-6-06 0930
T.E. Edmundson / JC Edmundson	4-6-06 1500	FED EX	
FED EX	4-7-06 0920	D. Smith	4-7-06 0920

SPECIAL INSTRUCTIONS

~~(2) addition to item # 2 Run gross alpha and gross beta off available material.~~ 04/05/06

(1) ICP Metals - 6010TR (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium}; ICP Metals - 6010A (Add-on) {Titanium, Uranium, Zinc, Zirconium}, Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *
S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-025-007	Page 1 of 1

Collector C. Martinez/K Singleton/D. Bowers	Company Contact C. Martinez	Telephone No. 509-539-2816	Project Coordinator KESSNER, JH	Price Code Air Quality	Data Turnaround 21 days
Project Designation 100-BC Remaining Pipelines and Sewers - Soil Full Protocol	Sampling Location 100-C-9:2 (1607-B8 & B9)		SAF No. RC-025		
Ice Chest No. ERC-99-062	Field Logbook No. EL-1585-5	COA R100C92000	Method of Shipment fed ex		
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060351		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

none

Special Handling and/or Storage

cool 4 degrees centigrade

Preservation	None	Cool 4C	Cool 4C	Cool 4C	None	Cool 4C
Type of Container	G/P	G/P	aG	aG	G/P	aG
No. of Container(s)	1	1	1	1	1	1
Volume	250g	250g	250mL	250mL	500mL	250mL

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.	Chromium Hex - 7196	PCBs - 8082	Semi-VOA - 8270A (TCL)	See item (2) in Special Instructions. 04/05/06	Pesticides - 8081, ~~Chlorophenoxy Herbicides - (SW8151)~~ 04/05/06
J11VM4	SOIL	04/05/06	1455	✓	✓	✓	✓		✓
J11VM5	SOIL	04/05/06	1500	✓	✓	✓	✓		✓
J11VM6	SOIL	04/05/06	1058	✓	✓	✓	✓		✓
J11VM7	SOIL	04/05/06	1052	✓	N/A	N/A	✓		N/A

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Kevin Singleton	1630 4-5-06	3728 Ref 2A	1630 4-5-06
3728 #2A	4-6-06 0930	T.R. Edmondson / T.R. Edmondson	4-6-06 0930
T.R. Edmondson / T.R. Edmondson	4-6-06 1500	FED EX	
FedEx	4-7-06 10920	W. Smith	4-7-06/0920
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS 04/05/06

~~(2) addition to item # 2. Run gross alpha and gross beta off available material.~~

(1) ICP Metals - 6010TR (Client List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Vanadium]; ICP Metals - 6010A (Add-on) [Titanium, Uranium, Zinc, Zirconium]; Mercury - 7471 - (CV)

(2) ~~Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]~~ 04/05/06

Personnel not available to relinquish samples from 3728 Ref # 2A on 4/6/06

Matrix *

S=Soil
SE=Sediment
SO=Solid
SL=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-C-9:2			DATA PACKAGE: K0288		
VALIDATOR: TLI		LAB: LLI		DATE: 9/2/00	
			SDG: K0288		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J11VK9	J11VL0	J11VL1	J11VL2	J11VL3	J11VL4
J11VL5	J11VL6	J11VL7	J11VL8	J11VL9	J11VM0
J11VM1	J11VM2	J11VM3	J11VM4	J11VM5	J11VM6
J11VM7					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

Continuing calibrations acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: bis(2-ethylhexyl)phthalate - U all at RQL

FB - di-n-butylphthalate -

4. ACCURACY (Levels C, D, and E)

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A
Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A

Comments:
MS 2-methylphenol (52%), 4-methylphenol (58%), 124 trichlorobenzene (58%)
J all
2,4-dinitrophenol - LCS (17%) - J all
no PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD RPD values acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: phenol (33%) 4 metylphenol (40%) n-nitrosodi-n-propylamine (31%) 2,4,6-trichlorophenol (34%) pentachlorophenol (54%) di-n-octylphthalate (39%) — J all

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments:

GC/MS ORGANIC DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Laboratory properly identified and coded all TIC? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: 152 over

9. SAMPLE CLEANUP (Levels D and E)

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: